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UNITED STATES DEPARTMENT OF AGRICULTURE
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*To Miss Craven
with sincerest thanks
for her very helpful
cooperation
N.W. Hazen*

THE CITRUS INDUSTRY OF PALESTINE

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THE CITRUS INDUSTRY OF PALESTINE

The rapid development in recent years of Palestine citrus production and exports has attracted attention in other citrus-producing countries, especially in countries exporting winter oranges. In these, great concern is felt over the increasing competition of Jaffa fruit on the principal European markets. From 1930-31 to 1937-38, citrus exports from Palestine registered a 360-percent gain, while those from other countries remained unchanged or increased only slightly. Moreover, less than one-half of the present acreage in Palestine is of full bearing age, and it is estimated that in 1942-43 the quantity of citrus fruit available for export will be twice as large as that exported in 1937-38.

Although Palestine ranks fifth as a world citrus producer, it is the world's second largest exporter of citrus fruit, coming after Spain, and its shipments exceed by far those of the United States. At present, Palestine citrus fruit does not compete directly with the American product on the markets of Europe, as the latter reaches those markets at about the time the Jaffa season is ended. When the Valencia oranges recently grafted on grapefruit trees in Palestine come into bearing, however, they may constitute a competitive factor for the early arrivals of California oranges in Europe.

The citrus industry holds a unique position in the economic structure of Palestine, especially when compared with that of other citrus-producing countries. During the 3-year period 1935-1937, the value of citrus exports from Palestine represented, on an average, about 79 percent of the combined value of all agricultural and industrial exports. This excessive dependence of the country's economy on citrus production was taken for granted, and the danger of binding its destiny to the ups and downs of a single crop was minimized as long as returns from the sale of citrus fruit were high. Low prices resulting from heavy supplies and lack of markets in recent years, however, have put the industry in a critical state.

This study, which is partly based on a field investigation conducted in Palestine in January 1938, describes the citrus industry there and points out the various factors that might affect its future development.

GENERAL ASPECTS

Origin and development

The citrus industry of Palestine is concentrated in the Maritime Plain, on the Mediterranean Coast. It is confined to a narrow strip of land extending from a point near Gaza, in the south, to Acre, which lies about 12 miles north of Haifa (see map). From the coast inland, the belt does not extend more than 5 or 6 miles, except in a few sections where the plain widens out. Most of the citrus groves lie within a 30-mile radius of Jaffa, although there are important grapefruit districts in the Valley of Jezreel or Emek and along the southern shores of the Sea of Galilee.

Of the fruits now grown in Palestine, it is believed that the citron (Ethrog in Hebrew) is the oldest known in that country. With the development of its use in ritual, production is said to have reached a certain economic importance as early as the middle of the second century B.C. The sour orange (Nareng in Arabic), the sweet orange (Bartuqan or Bartuqal in Arabic), and the lemon (Laimoon in Arabic) have a somewhat more recent origin than the citron and are said to have been introduced into Palestine at the beginning of the tenth century A.D. Mandarins were not known in that country prior to 1825, when they were imported from China. The grapefruit is the latest of the citrus family to be introduced into Palestine and was imported from the United States early in this century. The shaddock, on the other hand, considered by many as closely related to the grapefruit, has been grown in Palestine since the Middle Ages and was then referred to as "Paradise apple."

The Arabs are credited with having established the first commercial citrus plantings of Palestine about 150 years ago, while Jewish-owned citrus groves were not set out until about 100 years later. At the beginning of the nineteenth century, the citrus crop of Palestine had already begun to take on a certain importance in the agricultural economy of the country. Lack of adequate long-distance transportation facilities during the early years of the industry's development, however, resulted in the consumption of the crop within the country or in neighboring localities.

The oldest groves are said to have been established at Acre, at the northern end of the Maritime Plain, where good water is found. The Florida Red Scale, however, known in Palestine as "Black Scale" soon developed to such proportions that many trees in that region were destroyed in order to prevent the insect from spreading to other districts. The foundation of the present industry began at Jaffa late in the nineteenth century, the first commercial plantings having been established there about 1830. At the close of the century, the citrus industry had become significant in the foreign trade of Palestine. Thus, from 1885 to 1900, exports of citrus fruit from Palestine averaged between 250,000 and 300,000 boxes a year. Even during that early period, the United Kingdom was the principal market for Palestinian oranges, while a substantial trade in lemons was conducted with Russia.

Citrus production increased rapidly after 1900. From 1901-2 to 1913-14, citrus exports rose from 250,000 to 1,600,000 boxes. The World War, however, administered a severe setback to the industry. Although export and production statistics for the war years are not available, it is estimated that during the 1914-15 season exports of citrus totaled only 109,000 boxes compared with the 1,600,000 boxes exported in 1913-14.

Immediately following the World War, the citrus groves of Palestine were rehabilitated and new plantings were made. The industry expanded rapidly, and production and exports soon reached significant proportions again. A greater increase in acreage under citrus trees took place after 1927, and in 1937-38 production approximated 13.5 million boxes. Moreover, it is estimated that citrus production during the 1942-43 season will reach 29 million boxes. Handling facilities and new outlets for the crop, however, have not kept pace with this rapid development in production.

Before the World War, oranges made up the bulk of the Palestine citrus exports, while lemons were next in importance. At present, oranges represent about 85 percent of the citrus exports, grapefruit 14 percent, and lemons less than 1 percent.

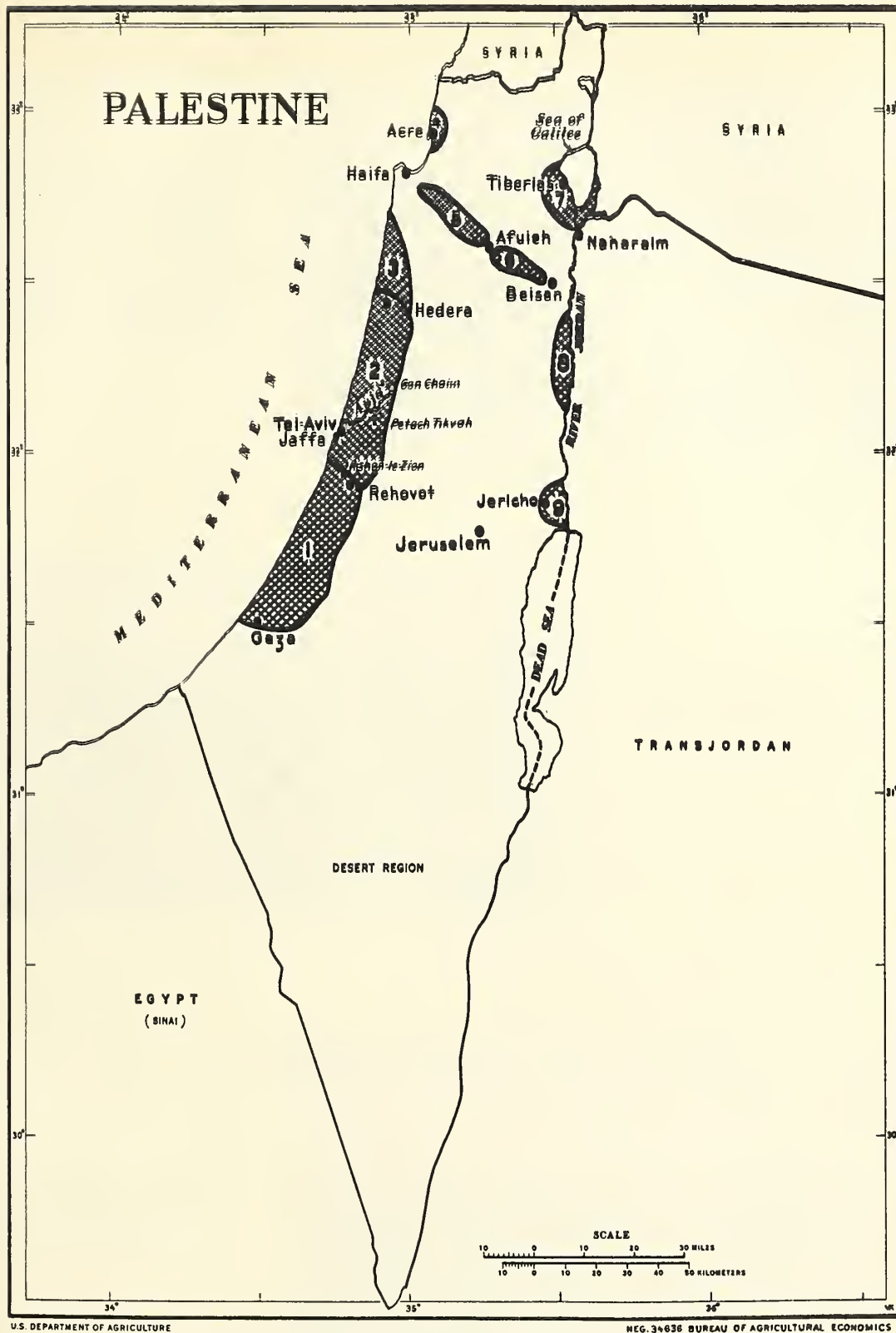


Fig. 1. Approximate citrus-growing regions divided into 9 zones according to soil, climate, and water supply



Fig. 2. Arab orange grove, 70 years old, just outside Jaffa, said to be oldest in Palestine. Trees are on sour orange stock, 6.5 feet apart and yield profitably until 25 years old, after which they are replaced. Note palm trees in the grove and young orchard and city of Jaffa in background.

Fig. 3. Shamouti orange grove, 2 years old, in the Arab district of Jaffa. Note palm trees in background.



Fig. 4. Shamouti orange grove, 8 years old, on sour stock in the Jewish settlement of Gan Chaim, 17 miles northeast of Jaffa.

Climate, soil, and water supply of the citrus belt

Generally speaking, it may be said that Palestine has only two seasons: summer, which is hot and dry; and winter, the season of rain and high humidity. The climate of Palestine is otherwise as diverse as its topography and ranges from mildly temperate to subtropical. In the Maritime Plain, where the bulk of the citrus crop is grown, the climate ranges from moderate to subtropical. Here, the humidity is higher than in any other region of the country and does not vary a great deal from month to month.

Compared with climatic conditions in the citrus regions of California and Florida, the citrus belt of Palestine has a higher average temperature, a higher degree of humidity, and a longer growing season. As a result, the citrus trees of Palestine are more sensitive to sudden changes in weather than are trees in those two States, are easily injured by frost, and are less resistant to hot desert winds. While frosts rarely occur on the coastal plain of Palestine, the hot east winds of late April or early May and of September or October, known as the "Khamseen," are dreaded because of the serious damage they sometimes cause to the citrus crop. Strong winter winds blowing from the sea constitute another climatic danger, often causing considerable damage to the trees. On the whole, however, it may be said that the citrus crop of Palestine is produced under climatic conditions varying less than those of the citrus regions of the United States.

The rainy season extends from the latter part of October to early April, but the months of heaviest rainfall are December, January, and February. The summers are rainless. The average precipitation for the country as a whole is less than 20 inches, although it varies greatly from year to year. The rainfall also varies greatly from region to region, diminishing from north to south and from west to east. The Maritime Plain receives the greatest amount of rainfall, with an average fall of 23 inches at Acre in the north and 15 inches at Gaza in the south. This is a greater precipitation than is received in most of the citrus regions of California, where irrigation, as in Palestine, is generally practiced.

The soils of the citrus belt of Palestine range from sand to clay loam, with the well-drained sandy-loam soils predominating. In their natural state, they are generally poor in both mineral and organic content (poorer than those of the California and Florida citrus belts) but respond remarkably well to chemical and organic fertilization, especially with nitrogen. Under exceptional conditions, particularly in low-lying areas, there are underlying layers of hardpans at various depths, locally known as "Nazaz," which require special drainage measures. In general, it can be said that Palestine citrus soils vary much more in texture and composition within small areas than do those of California and Florida. Almost any grove, no matter how small, contains several types of soils, a condition that greatly complicates irrigation problems in Palestine.

The citrus fruit of Palestine is grown under irrigation. Most of the water for this purpose comes from wells, although a few springs also are used. In the small valley of the River Auja, just north of Jaffa, as well as in the Jordan Valley, water for irrigation purposes is pumped from the river. The depth of the wells ranges from 25 to 600 feet, with most of them less than 300 feet. In highly developed citrus regions, such as Petach Tikvah and Rehobot, only a few miles east and southeast of Jaffa, it has been necessary

in recent years to deepen the borings in order to obtain adequate supplies of water; but in other sections the water problem has not become acute. In general, the water situation is not so serious as in southern California, although it is less favorable than in Florida.

Except in a few isolated sections, the quantity of injurious salts in irrigation water is insignificant. Yet, in spite of the extremely low lime content of most of the citrus soils, well water is usually quite high in lime.

From the standpoint of soil, climate, and water supply, the Palestine citrus districts may be divided, for the purpose of this study, into nine zones, as shown in figure 1. 1/ Beginning at Gaza, on the coast, and going northward, these zones are as follows:

- (1) From Gaza to Rehovot
- (2) From Rehovot to Hedera
- (3) From Hedera to Haifa
- (4) From Haifa to Acre, or the Acre district
- (5) Eastward from Haifa to Afuleh)
) Known as the Enak
- (6) Eastward from Afuleh to Beisan)
- (7) Southeastward from Tiberias to Naharaim, the Upper Jordan Valley
- (8) Southeast of Beisan, the Central Jordan Valley
- (9) The Jericho district, southermost point of the Jordan Valley

In the first zone, extending from Gaza to Rehovot, the climate and rainfall are fairly uniform throughout. From Gaza to Gedera (about 9 miles south of Rehovot), the soil is medium heavy, brown in color, and contains a great deal of very small calcareous pebbles. Along the coast, the water is both good and plentiful, but farther east it becomes less plentiful and frequently has a high salt content. From Gedera to Rehovot the soil is a light red, sandy loam, and there is abundant water of good quality. Some of the best groves of Palestine, from the standpoint of yield, quality of fruit, and development of trees, are in the Rehovot district. As to the possibilities for expansion, it is estimated that in the sections of the zones where both water and soil conditions are good, the present acreage in citrus is equal to only about 40 percent of the area that could be planted. The sections having salty water, on the other hand, have unlimited possibilities, from a soil standpoint, but are lacking in good water.

The second zone, which extends northward from Rehovot to Hedera, also has a uniform climate and rainfall, although the latter is more abundant than in the first zone. In general, the soil is a light red, sandy loam, poorer in quality than farther north from Rehovot. There is excellent and abundant water, with the exception of the area along the Auja River in Petach Tikvah,

1/ Official maps of Palestine citrus districts are not available. Figure 1 shows only rough outlines of such districts and of the nine specially defined zones.

where it is less plentiful and higher in salt content, probably because of seepage from the Auja. A large proportion of the soil in Petach Tikvah and Hedera is of the black, heavy type. The Sharon district in that zone is the best citrus section in Palestine from the standpoint of both soil and water, and only about 25 percent of the available area is now planted in citrus.

The third zone, which extends from Hedera to Haifa, has a fairly uniform but cooler climate and more rainfall than the second zone. The soil is of a rather uniform red, sandy type, while the underground water is good but not so plentiful as in the second zone. It is possible to increase the acreage at present planted to citrus in this zone one or one and one-half times.

The Acre district, or fourth zone, has a much cooler climate and more abundant rainfall than the third zone. The soil here is generally of a heavy type, but information regarding further expansion of the citrus acreage is not available.

The climate of the fifth zone, which extends from Haifa to Afuleh, becomes hotter and drier as one moves eastward from Haifa. Here in the Valley of Jezreel, or Emek, the soil is uniformly of the heavy, black type. The underground water is adequate in the western section near Haifa but is scarce in the eastern portion of the Valley.

The sixth zone, which is also in the Emek and which extends from Afuleh to Beisan, is completely below sea level. Temperatures are higher, and there is less moisture than in the fifth zone. There is also a prevalence of strong westerly winds. The soil is generally heavy, varying in color from brown to black. Spring water is largely used for irrigation; wells so far have not proved satisfactory because of their high salt content, especially toward Beisan. The heavy soil of both the sixth and the seventh zones is well suited for the production of early grapefruit. Expansion is limited, however, by scarcity, or high salinity, of the water.

The Upper Jordan Valley, which constitutes the seventh citrus zone of Palestine, is also below sea level and lower than the sixth zone. Here the climate is uniformly hot and dry. The soil along the western shore of the Sea of Galilee and the western bank of the Jordan is of a heavy, black, basaltic base. Along the eastern banks, on the other hand, it is a fine loess of high lime content. Surface irrigation is used in this zone, for which the water is pumped from the Sea of Galilee and the Jordan.

In the eighth zone, the Central Jordan Valley, the climate is dry but much cooler in the winter than it is in the seventh zone. The soil is fairly heavy and ranges in color from deep red to black. Springs supply most of the irrigation water used in citrus groves. Here again, while soil and climate are suitable for an expansion of the present citrus acreage, scarcity of water is the limiting factor.

The Jericho district, in the southernmost section of the Jordan Valley, is the hottest and driest of all the citrus zones of Palestine. It has the lowest altitude and the warmest winters of any citrus district. The soil here is a fine loess of high lime content, and spring water is used for irrigation. Lack of suitable water is the principal limiting factor in the expansion of the present citrus acreage.

From the above description of the various citrus zones of Palestine, it may be seen that there are good possibilities for citrus expansion in that country from the standpoints of soil, climate, and water supply. It is estimated that, at present, there is in Palestine an area suitable and available for immediate citrus production at least equal to the total acreage now planted in citrus. This lies mainly along the coast of the first zone, from Gaza to Rehovot, in the second zone, from Rehovot to Hedera, and in the southern part of the third, from Hedera to Haifa (see figure 1).

Acreage and production

Although citrus production is the most important agricultural enterprise in Palestine and the value of citrus products has in some recent years exceeded 80 percent of the value of all exports from that country, no detailed and reliable citrus acreage or production statistics are available. Some fairly good data on acreage, location, and age of Jewish-owned citrus groves have been compiled by the Jewish agency for Palestine, but they cover only about 60 percent of the citrus industry of the country. Some time ago, the Government of Palestine began a detailed survey of the industry, which may be completed by the end of 1938. From estimates now available, however, it appears that at the end of 1937 Palestine had about 74,000 acres planted to citrus fruit, compared with 686,000 acres in the United States on July 1 of that year. The distribution of this acreage among various types of fruit is believed to be about as follows: 85 percent in oranges, 12 percent in grapefruit, and the balance in lemons, citrons, mandarins, etc.

The bulk of the acreage now under citrus in Palestine was planted during the 10-year period 1927 to 1936; but the greatest increase in planting occurred in the second half of that decade (table 1). At the beginning of 1927, the area under citrus fruit in Palestine was estimated at only 9,500 acres. The first stage in acreage development began during the 5-year period starting in 1927. By the end of 1931, the acreage under citrus had increased to 30,000 acres. In most of the new groves there was a tendency to increase the distances between trees, with many orchards planted with 160 trees per acre and a few with 80 trees per acre.

Table 1. Acreage planted to citrus fruit in Palestine, 1922-1937

Year	: Area planted	: Total acreage:	Year	: Area planted	: Total acreage
	: during year	: at end of year:		: during year	: at end of year
	: Acres	: Acres		: Acres	: Acres
1922.....a/	7,170	7,170	1930.....	4,820	26,310
1923.....	120	7,290	1931.....	3,710	30,020
1924.....	120	7,410	1932.....	8,650	38,670
1925.....	120	7,530	1933.....	10,750	49,420
1926.....	1,980	9,510	1934.....	12,350	61,770
1927.....	4,320	13,830	1935.....	6,920	68,690
1928.....	2,720	16,550	1936.....	4,940	73,630
1929.....	4,940	21,490	1937.....	370	74,000
:	:	:	:	:	:

Compiled from official sources.

a/ Planted before and during 1922.

By far the largest increase in citrus planting in Palestine took place in the 5-year period 1932 to 1936, when about 44,000 of the 74,000 acres at

present under citrus were planted. During 1933 and 1934, alone, more than 23,000 acres were put under citrus. Thus, more than one-half of the total acreage now under citrus either is of nonbearing age or bears large fruit, which is not allowed to be exported. During the 5-year period 1932-1936, there was a tendency to reduce the spacing between trees; from 200 to 240 trees were planted to the acre, compared with an average of 88 orange trees per acre in California and 65 in Florida.

Before 1930, Arabs had more land under citrus than did Jews. Since then, the acreage planted by Jews has increased, and it is now estimated that about 60 percent of the Palestine acreage under citrus is Jewish-owned. The remainder is owned largely by Arabs. Citrus fruit is also grown in five small German settlements, but the acreage is not very significant when compared with the total for the country. There is a rather pronounced difference between the methods employed by Arabs and those followed by Jews in the production and marketing of citrus, as well as in wages, hours of labor, organization, and standards of living. These will be pointed out as the occasion arises in the course of this study.

Table 2. Acreage under citrus fruit in Palestine, showing yearly increases and age of trees, 1922-1937

Age of trees in years	1922	1923	1924	1925	1926	1927	1928	1929
	Acres:	Acres:	Acres:	Acres:	Acres:	Acres:	Acres:	Acres:
1.....	7,170:	120:	120:	120:	1,980:	4,320:	2,720:	4,940
2.....	:	7,170:	120:	120:	120:	1,980:	4,320:	2,720
3.....	:	:	7,170:	120:	120:	120:	1,980:	4,320
4.....	:	:	:	7,170:	120:	120:	120:	1,980
5.....	:	:	:	:	7,170:	120:	120:	120
6.....	:	:	:	:	:	7,170:	120:	120
7.....	:	:	:	:	:	:	7,170:	120
8.....	:	:	:	:	:	:	:	7,170
Total.....	7,170:	7,290:	7,410:	7,530:	9,510:	13,830:	16,550:	21,490
	1930	1931	1932	1933	1934	1935	1936	1937
1.....	4,820:	3,710:	8,650:	10,750:	12,350:	6,920:	4,940:	370
2.....	4,940:	4,820:	3,710:	8,650:	10,750:	12,350:	6,920:	4,940
3.....	2,720:	4,940:	4,820:	3,710:	8,650:	10,750:	12,350:	6,920
4.....	4,320:	2,720:	4,940:	4,820:	3,710:	8,650:	10,750:	12,350
5.....	1,980:	4,320:	2,720:	4,940:	4,820:	3,710:	8,650:	10,750
6.....	120:	1,980:	4,320:	2,720:	4,940:	4,820:	3,710:	8,650
7.....	120:	120:	1,980:	4,320:	2,720:	4,940:	4,820:	3,710
8.....	120:	120:	120:	1,980:	4,320:	2,720:	4,940:	4,820
9.....	7,170:	120:	120:	120:	1,980:	4,320:	2,720:	4,940
10.....	:	7,170:	120:	120:	120:	1,980:	4,320:	2,720
11.....	:	:	7,170:	120:	120:	120:	1,980:	4,320
12.....	:	:	:	7,170:	120:	120:	120:	1,980
13.....	:	:	:	:	7,170:	120:	120:	120
14.....	:	:	:	:	:	7,170:	120:	120
15.....	:	:	:	:	:	:	7,170:	120
16.....	:	:	:	:	:	:	:	7,170
Total.....	26,310:	30,020:	38,670:	49,420:	61,770:	68,690:	73,630:	74,000

Compiled from official sources.

a/ Planted before and during 1922.

Until a few years ago, many agricultural and citrus experts in Palestine believed that only about 75,000 acres in that country were suitable for citrus production. This belief was based on the assumption that there was neither enough good soil in Palestine nor an adequate underground water supply for a greater extension in citrus acreage. Investigations were made, however, which proved that, from the standpoint of soil and water requirements, Palestine could double its acreage under citrus fruits. See detailed discussion, page 5.

The real obstacle in the way of any acreage extension at present results from the very low prices obtained for the fruit in recent years. In 1937, citrus planting was reduced to less than one-tenth of the area planted during the previous year and showed the smallest annual acreage increase since 1926. The 370 acres put under citrus during 1937 were all planted by Arabs, who, despite the prevailing low prices, still considered citrus production a profitable enterprise. The greater cost of production and marketing, together with the higher standard of living of the Jews, prevented them from investing further in citrus planting. Although prices were somewhat higher toward the end of the 1937-38 season, it is believed that in 1938 very few, if any, new groves have been planted by either Arabs or Jews. It is generally believed, however, that an increase of 2 or 3 shillings (from about 50 to 75 cents) per box in the average price received for the fruit in the English market during 1937-38 would be enough to stimulate again large-scale citrus planting.

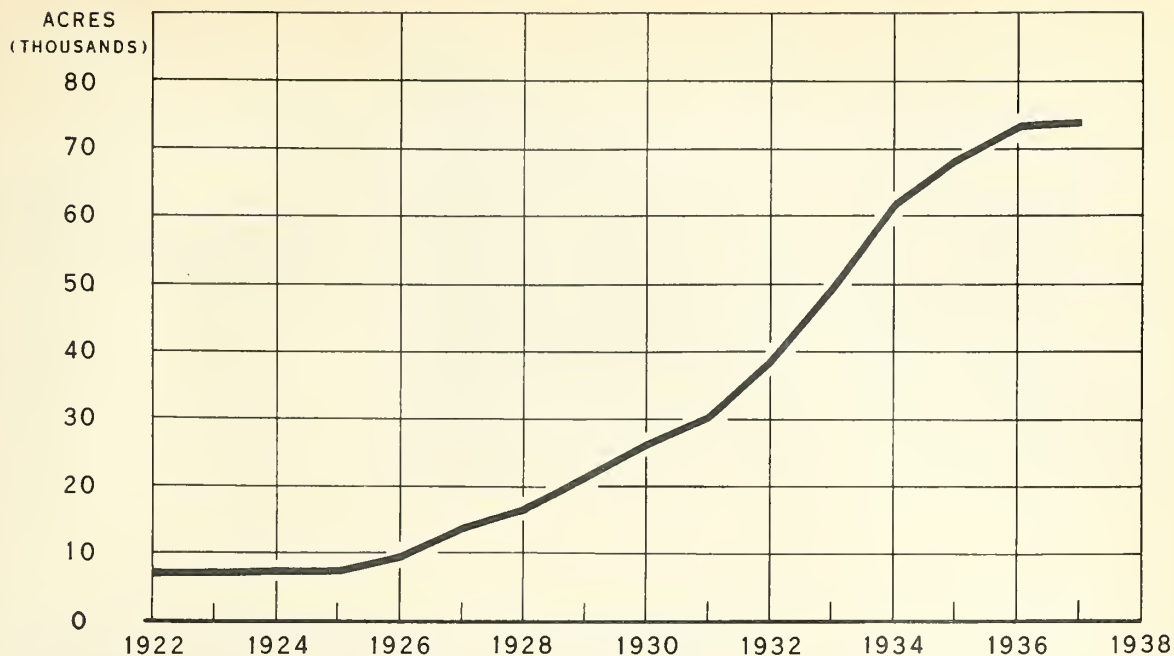
Palestine produces more citrus fruit in proportion to its size than any other country. Although official crop statistics are not available, export figures give an idea of the approximate volume of citrus production. See table 3. In calculating production from export statistics, it is generally estimated that the nonexportable portion of the crop, which is made up of oranges of the 112 size and larger, as well as of misshapen and bruised fruit, varies between 20 and 25 percent of the crop. Before the 1936-37 ban on the export of 112's and larger fruit, the unexportable fruit represented only about 10 percent of the crop.

According to estimates made in the United States Bureau of Agricultural Economics, in 1925-26 Palestine produced about 1.6 million boxes of citrus fruit. Twelve years later, in 1937-38, the crop had increased to about 13.5 million boxes produced on some 40,000 acres of bearing but not fully grown trees. This represents an average of 338 boxes of fruit to the acre, which is the highest average yield obtained in any citrus-producing country. California in 1937-38 had a total estimated citrus crop of 53.6 million boxes produced on 285,200 bearing acres, or an average yield of only 188 boxes of citrus per acre. During the same season, Florida produced 40.3 million boxes on 285,250 bearing acres, or an average of 141 boxes to the acre. See detailed discussion, page 44. In general, the yield per acre in the Jewish-owned groves of Palestine is higher than that of Arab orchards as a result of more efficient methods of production.

In pre-war years, as at present, the bulk of the Palestine citrus production consisted of the Shamouti or Jaffa orange. Lemons, however, were the next important item, while grapefruit were not commercially grown. At present, on the other hand, grapefruit are next in importance after oranges and account for about 15 percent of the citrus crop, while the lemon crop is insignificant.

Since citrus trees on some 35,000 acres in Palestine are of nonbearing age, a big increase in citrus production is expected in the next few years. Production is expected to reach 29 million boxes by 1942-43 - in 5 years more than doubling the 1937-38 production. See details, page 38.

PALESTINE: CITRUS FRUIT ACREAGE, 1922-37



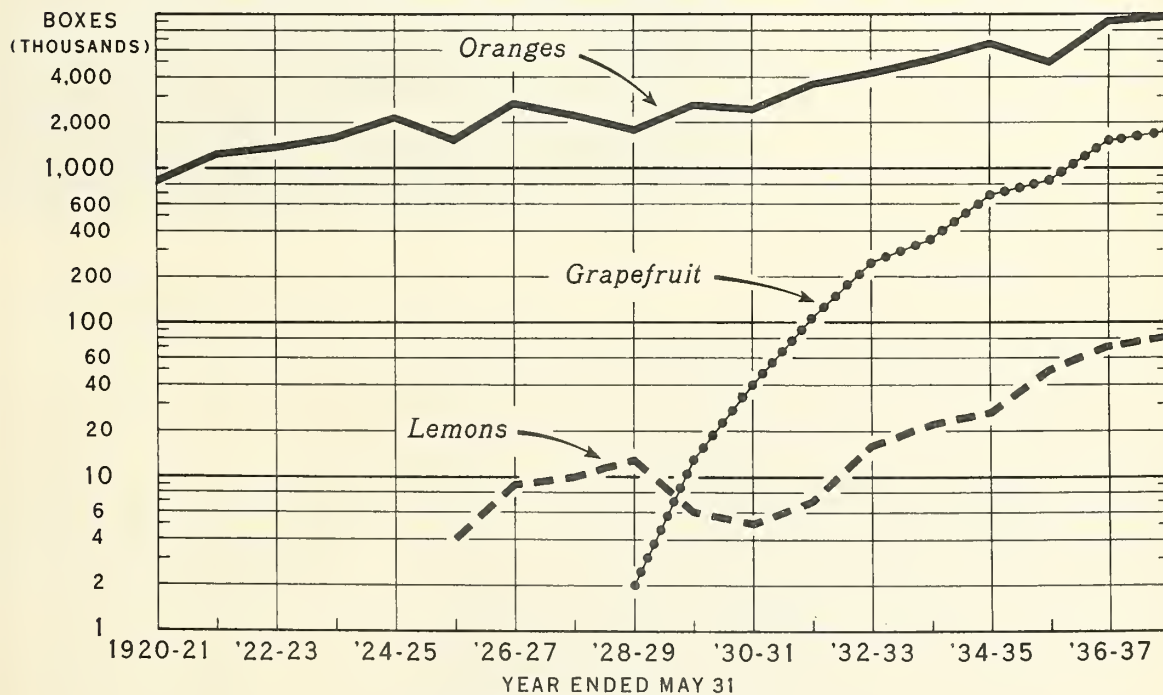
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Fig. 5.

PALESTINE: QUANTITY OF ORANGES, GRAPEFRUIT, AND LEMONS EXPORTED, 1920-21 TO 1937-38



DATA FOR 1937-38 ARE PRELIMINARY

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Fig. 6.



Fig. 7. Unloading citrus fruit, for export, from railroad on the pier at Haifa.

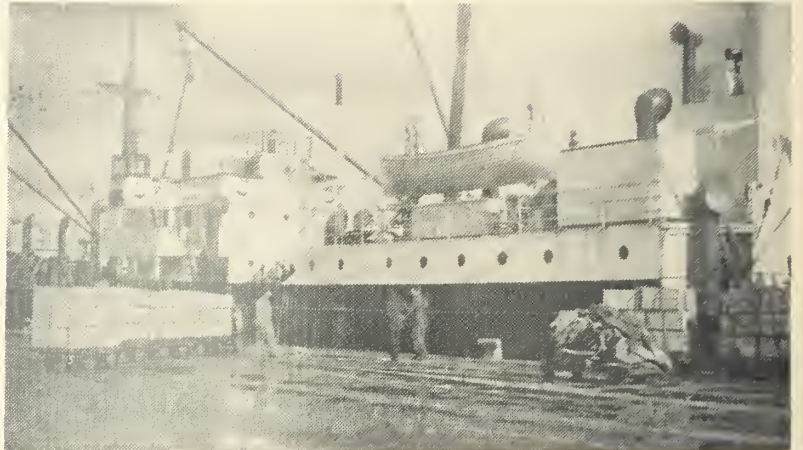


Fig. 8. Loading citrus fruit for export on the pier at Haifa.

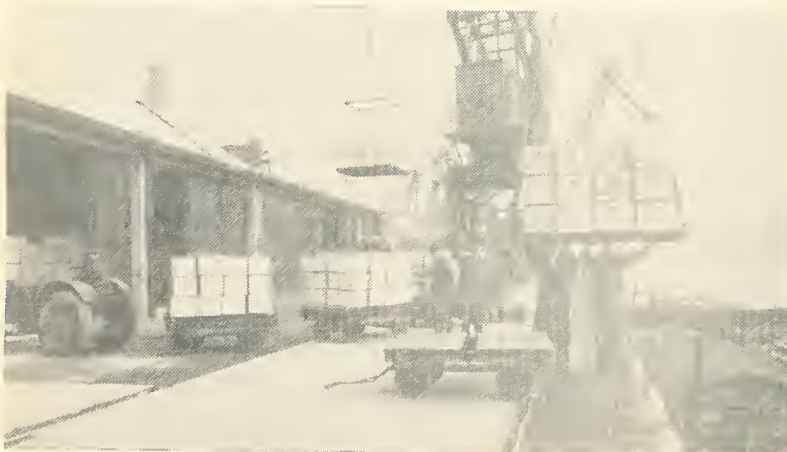


Fig. 9. Discharging Jaffa oranges at London. The fruit is discharged into the barges shown tied to the quay, and towed up the Thames to the wharf.

Table 3. Quantity and value of oranges, grapefruit, and lemons exported from Palestine, 1920-21 to 1937-38

Year ended:	Oranges		Grapefruit		Lemons		Total	
May 31 :	Quantity:	Value :	Quantity:	Value :	Quantity:	Value :	Quantity:	Value
:	1,000 :	1,000 :	1,000 :	1,000 :	1,000 :	1,000 :	1,000 :	1,000
:	boxes :	dollars:	boxes :	dollars:	boxes :	dollars:	boxes :	dollars
1920-21....	831:	766:	- :	- :	- :	- :	- :	-
1921-22....	1,234:	1,372:	- :	- :	- :	- :	- :	-
1922-23....	1,366:	1,946:	- :	- :	- :	- :	- :	-
1923-24....	1,589:	1,902:	- :	- :	- :	- :	- :	-
1924-25....	2,146:	2,896:	- :	- :	- :	- :	- :	-
1925-26....	1,515:	2,268:	- :	- :	4:	5:	1,519:	2,273
1926-27....	2,659:	4,005:	- :	- :	9:	14:	2,668:	4,019
1927-28....	2,210:	3,177:	- :	- :	10:	15:	2,220:	3,192
1928-29....	1,788:	2,596:	2:	5:	13:	19:	1,803:	2,620
1929-30....	2,591:	3,778:	13:	29:	6:	10:	2,610:	3,817
1930-31....	2,425:	3,538:	40:	78:	5:	5:	2,470:	3,621
1931-32....	3,585:	6,731:	106:	226:	7:	8:	3,698:	6,965
1932-33....	4,229:	6,914:	245:	455:	16:	25:	4,490:	7,394
1933-34....	5,158:	12,049:	353:	908:	22:	40:	5,533:	12,997
1934-35....	6,625:	14,937:	683:	1,687:	26:	59:	7,334:	16,683
1935-36....	4,992:	10,901:	844:	1,512:	50:	158:	5,886:	12,571
1936-37....	9,191:	16,681:	1,534:	2,301:	71:	143:	10,796:	19,125
1937-38 a/:	9,573:	16,624:	1,790:	2,492:	78:	151:	11,441:	19,267
:	:	:	:	:	:	:	:	:

Compiled from official sources. Original value in Palestine currency converted to dollars at the average yearly rate of exchange.

a/ Preliminary.

Marketing

Picking, grading, and packing

Harvesting of the Palestine citrus crop extends from September to May, inclusive, with the heaviest movements occurring during the 4 months, December through March. Lemons are the first to be harvested; picking begins early in September and in some years even in late August. Grapefruit picking comes next, starting generally late in September, while the harvesting of oranges usually begins around the middle of November.

Citrus-fruit picking is done in Palestine in much the same way as in the United States. Clippers of the tuttle type are most commonly used, although the wiss clipper can still be seen in many Arab groves. In Jewish groves, picking is done by both men and women; in Arab orchards, it is done by men and boys. For many years, burlap-lined wicker baskets were used throughout Palestine for the picking and carrying of fruit to the packing shed. Though fruit is less easily bruised when picked in baskets, the increased crop necessitated the introduction of the field box. Reduction in charges for carrying from grove to packing shed, space saving in the packing house, and better ventilation of the fruit have increased the popularity of

the field box. At present, fruit pickers in almost all the Jewish groves and in the large Arab orchards use the field box, while the burlap-lined wicker basket is still commonly used in medium-sized and small Arab groves. The field box has not yet been standardized, but is generally smaller than that used in either California or Florida.

Expert pickers are not commonly found in Palestine, the reason being that the workers who have been trained to pick fruit one season become graders, wrappers, or packers the following season. At the beginning of every season when the fruit is still green and difficult to handle, the serious task of teaching new groups the art of picking has to be undertaken. In general, picking operations are done rather carefully by those who ship their own fruit through cooperatives; but those who buy fruit on the tree are not very particular about its condition and do not always stress careful picking. In Jewish groves, wet fruit is never picked, whereas in some Arab orchards fruit may be picked if wet from rain but not when wet with dew.

The fruit is carried from the grove to the packing house in several ways. In small and medium-sized Arab groves, it is carried in baskets on the heads of women and children; in small and medium-sized Jewish groves and in large Arab orchards, men carry it to the packing shed in wagons. In large Jewish orchards, where roads were laid out from grove to packing house and where the spacing between trees is wide enough, light narrow-gaged (Decauville) railways, with either horsepower or manpower as means of locomotion, are generally used. In the old, densely planted groves, where it is not possible to use the narrow-gaged Decauville, a satisfactory method of transportation has been obtained within the past 2 years through the introduction of the monorail. The latter's low cost of operation may result in its wider use in the future.

In all Arab orchards and in most Jewish groves, the fruit brought from the field is dumped on reed mats on the floor of the packing shed in piles about 2 feet high, where it remains until it is packed. In the large Jewish groves, however, field boxes are brought into the packing house and stacked on one another until the fruit is ready to be packed. It is customary in Jewish groves to leave the fruit in the packing shed from 2 to 4 days after picking, depending upon its turgidity, before the actual packing begins. Arabs, on the other hand, usually pack immediately after picking, without allowing any time for curing.

The packing houses of Palestine consist of anything from large tents, which are moved from place to place in the groves, to large modern buildings. Almost every citrus grove has its own packing shed or house, the most common type being a small concrete building, with cement or wooden floor and tile roof. Centralized packing is almost unknown, there being only about six Jewish-owned central packing houses in all Palestine.

The fruit is never washed before packing; nor is there any necessity for washing it, because it is usually clean when it is brought to the packing house. During the past few years, however, the increased occurrence of sooty mold resulting from the spread of the Florida Wax Scale, and more particularly the increased amount of decayed fruit reaching the European markets, have led to many proposals for the introduction of washing and disinfecting solutions in packing houses. But the extreme decentralization of packing makes it difficult to use disinfecting solutions and has led to consideration of gas disinfection. This is still in the experimental stage.

In almost none of the packing houses of Palestine is modern machinery used in the packing process. The exceptions are a few large central packing houses where fairly satisfactory, electrically operated, sizing equipment may be found. By far the greater part of the fruit is still handled in the packing house in a primitive way, by packing crews sitting on the floor. Both sizing and grading are done by the eye method, and standards are not very uniform, except in the large Jewish central packing houses. Three grades are generally used. In normal years, exports consist of 40 percent first-grade fruit, 40 percent seconds, and 20 percent thirds. Wrapping is not done by packers, as in the United States, but by wrappers. Thus, the sorter passes the fruit to the stamper, who throws it to the wrapper, who then gives it to the packer. These primitive methods are costly as they result in the loss of workers' time and in possible injury to the fruit because of excessive handling.

There are two methods of packing citrus fruit in Palestine referred to as the "Arab" or "local" pack, and the "American" pack. In the Arab pack, the fruit is placed in the box, one directly on top of the other. The American pack is that commonly used in the United States, with one row of fruit placed in the space formed by the two rows under it. The Arab pack is used less each year and is being gradually replaced by the American pack. There is no standard box, and the same fruit may be packed in various counts and different-sized boxes, depending on the demand of the market. Three types of boxes are used: the normal box, weighing from 68 to 70 pounds net; the large box, weighing between 75 and 79 pounds net; and the extra large box, weighing between 85 and 89 pounds net. As a rule, about 60 percent of the exports are packed in normal boxes. Minimum and maximum sizes of export boxes are limited by Government regulations. For the 1937-38 season, the size limits allowed were as follows: 2

Oranges: 27.2 to 29.6 inches in length (converted from centimeters)
13.6 to 14.8 inches in width
10.8 to 12.0 inches in height

Grapefruit: 26.4 to 29.6 inches in length
13.2 to 14.8 inches in width
11.6 to 12.0 inches in height

Lemons: Packed in boxes prescribed for oranges or grapefruit.

The minimum and maximum counts of fruit packed for export are also limited by Government regulations. For the 1937-38 season, these limits were as follows: 2

Oranges: From 120 to 360 fruit per box

Grapefruit: To January 31, 1938, from 64 to 126 fruit per box
To February 28, 1938, from 80 to 96 fruit per box
After March 1, 1938, 80, 96, and 112 fruit per box

The export regulations established for the 1936-37 season required that consignment notes be furnished with all fruit presented for inspection before shipment. This made it possible, for the first time in the history of the Palestine citrus industry, to summarize citrus exports according to count. During the 1937-38 season, more than three-fourths of the oranges exported from Palestine were made up of 120, 150, and 180 sizes. The largest single group was 150's, representing 36 percent of total exports, followed by 180's, or 24

percent, and 120's, or 19 percent, of the fruit shipped. In the case of grapefruit, exports ranged in size from 64 to 126 per box, with the four sizes 64's, 80's, 96's, and 112's making up over 99 percent of the total. The largest single group was size 80, which accounted for almost 54 percent, followed by 96's, representing almost 31 percent.

Table 4. Distribution of oranges and grapefruit exports from Palestine according to number of fruit per box, 1936-37 and 1937-38

Number of fruit per box	1936-37		1937-38	
	Quantity	Percent	Quantity	Percent
	Boxes	Percent	Boxes	Percent
Oranges:				
120.....	1,788,193	19.5	1,794,271	18.9
128.....	71,922	0.8	23,343	0.2
136.....	2,340	a/	2,922	a/
140.....	246,295	2.7	125,098	1.4
144.....	430,552	4.7	274,683	2.9
150.....	3,375,302	36.9	3,403,383	35.9
152.....	3,342	a/	474	a/
160.....	164,606	1.8	102,127	1.0
180.....	1,633,809	17.9	2,255,243	23.7
200.....	2,136	a/	254	a/
210.....	728,408	7.9	873,276	9.3
220.....	553	a/	0	0
226.....	22	a/	23	a/
240.....	425,995	4.7	477,086	5.0
250.....	17	a/	96	a/
260.....	735	a/	25	a/
270.....	3,881	a/	6,202	a/
280.....	5,521	a/	10,141	0.1
288.....	19,604	0.2	23,076	0.2
294.....	245,199	2.7	95,640	1.0
300.....	15,236	0.2	41,236	0.4
320.....	164	a/	0	0
336.....	2,495	a/	4,479	a/
340.....	71	a/	0	0
360.....	3	a/	959	a/
Total.....	9,167,401	100.0	9,512,337	100.0
Grapefruit:				
54.....	10,876	0.7	0	0
64.....	349,297	22.7	133,845	7.4
80.....	731,179	47.7	963,978	53.8
96.....	317,953	20.8	559,091	31.0
100.....	9,524	0.6	7,166	0.4
108.....	26	a/	0	0
112.....	84,241	5.5	126,979	7.0
120.....	5,044	0.3	2,763	0.1
126.....	18,639	1.2	5,752	0.3
128.....	2,333	0.1	0	0
140.....	286	a/	0	0
150.....	5,827	0.4	0	0
180.....	3	a/	0	0
Total.....	1,555,038	100.0	1,800,134	100.0

Compiled from Agricultural Supplements No. 18 to "The Palestine Gazette" of June 17, 1937, and No. 30 to that of June 16, 1938. Preliminary for 1937-38.

a/ Less than one-tenth of 1 percent.

With regard to fruit standards, each packing house or selling organization works out what it considers the proper selections. Fruit is packed under many different brands, according to the number of selling organizations and market connections. In general, citrus growers choose their own brands when packing, whereas most brokers have their fruit packed under brands that they use on other products and that are their own specially registered trade-marks.

Women are not generally employed in Arab packing houses. In these, sorting, wrapping, and packing is done by men, although boys sometimes do the wrapping. Sorting in Jewish groves is generally done by women, wrapping by boys and girls, and packing by men.

It is estimated that in a small packing house of Palestine, a crew turning out 100 packed boxes a day would consist of two sorters, a stamper, two wrappers, a packer, a carpenter, and a man to carry boxes and do odd jobs. Wages vary from a maximum of \$6 a day for a chief packer to a minimum of 60 cents a day for a child wrapper. In general, workers in Jewish packing houses receive higher wages for an 8-hour day than do workers in Arab packing houses for a longer work day. See detailed discussion, page 49.

Transportation and shipping

Nearly all the Palestine citrus fruit destined for export is transported directly from grove to boat or railroad station by truck or wagon. Arab growers whose groves are close to shipping points or who are so located as to be inaccessible to motor trucks generally transport their fruit by camel to loading points. There is no lack of feeder roads from the principal citrus districts to the main highways, but roads between groves leave much to be desired. During the rainy season, when the bulk of the fruit is shipped, these muddy and bumpy roads make traffic difficult between the various groves. Moreover, as truck drivers must go at high speed to keep from sinking in the mud and sand, the jolting that results usually damages the fruit.

A coastal highway linking Gaza in the south to Haifa in the north was recently completed. That part from Jaffa to Haifa was not opened to traffic until the beginning of the 1937-38 season. This main highway is connected with the coastal railroad by means of newly constructed feeder roads. Railroad facilities have expanded in recent years and have almost kept pace with the increase in citrus production. Storage and inspection facilities at railroad stations also seem to be satisfactory.

The cost of transportation by truck varies and is not fixed by the mile. It depends on many conditions, such as the quantity of fruit shipped and personal contacts. Railroad freight, on the other hand, is fixed at 10 mils (about 5 cents) per box as a flat rate of transportation from any station to Haifa.

More than 98 percent of the citrus fruit exported from Palestine is loaded at the ports of Haifa, Jaffa, and Tel-Aviv. The remainder is shipped by rail to neighboring countries. Of the three cities, only Haifa has a deep-water harbor where boats can tie up alongside the quay and load by modern methods; at Jaffa and Tel-Aviv the fruit is lightered to the ships. The new Haifa harbor was completed in October 1933 and has since been burdened with heavy citrus shipments. The fact that this deep-water harbor makes it possible to load fruit for export even under bad weather conditions and thus

eliminate the delay and rough handling common to lighter-port shipping has made Haifa very popular with Palestine citrus-fruit exporters. Although its wharf space is limited, with room for only four boats at a time, and although its storage facilities are inadequate, Haifa has now definitely replaced Jaffa as the principal citrus-exporting port of Palestine. In 1936-37, 62 percent of all Palestine citrus-fruit exports, or almost twice as many boxes as were handled through the port of Jaffa, were shipped from Haifa. During the 1937-38 season, citrus exports through Haifa decreased slightly, with 55 percent of the total shipped through that port against 34 percent exported from Jaffa. See table 5. Plans under way for the enlargement of Haifa harbor were dropped after the 1936 riots, but it is not unlikely that in the future a still larger portion of the Palestine citrus exports will be shipped through that port.

Table 5. Citrus-fruit exports from principal ports and railroad stations of Palestine, 1934-35 to 1937-38

Exported from	1934-35		1935-36		1936-37		1937-38 a/	
	Quan-	Share	Quan-	Share	Quan-	Share	Quan-	Share
	tity	of	tity	of	tity	of	tity	of
	total	total	total	total	total	total	total	total
	1,000		1,000		1,000		1,000	
	boxes	Percent	boxes	Percent	boxes	Percent	boxes	Percent
Jaffa.....	4,213	57.4	3,479	59.0	3,602	33.5	3,929	34.4
Haifa.....	2,953	40.3	2,243	38.0	6,661	62.0	6,304	55.2
Tel-Aviv.....	-	-	-	-	366	3.3	1,011	8.9
Kantara.....	165	2.3	176	3.0	145	1.2	166	1.5
Total.....	7,331	100.0	5,898	100.0	10,774	100.0	11,410	100.0

Compiled from the Agricultural Supplements No. 18 to "The Palestine Gazette" of June 17, 1937, and No. 30 to that of June 16, 1938. a/ Preliminary.

Jaffa, of course, is the oldest port from which Palestine citrus fruit is exported. As late as the 1935-36 season, or 2 years after the Haifa harbor was built, nearly two-thirds of Palestine's citrus exports were still lightered to boats anchored off that port. Its proximity to most of the citrus groves, the lack of railroad facilities between the principal citrus districts and Haifa, and the fact that the main highway between those districts and Haifa had not been constructed militated in favor of exports from Jaffa. The decline of Jaffa as the principal port for citrus exports, however, began with the Arab anti-Jewish riots during the spring and summer of 1936. The striking Arabs, by preventing Jews from using the port of Jaffa, forced them to export through Haifa and at the same time encouraged them to push their plans for the construction of a port in the Jewish city of Tel-Aviv. In 1935-36, almost 60 percent of all citrus exported from Palestine were shipped through Jaffa. In 1936-37 and 1937-38, exports through Jaffa declined to 33.5 percent and 34.4 percent, respectively. Moreover, up to and including the 1935-36 season, both Jews and Arabs exported citrus fruit through the Jaffa lighter port. From 1936-37 to date, on the other hand, all citrus fruit exported through the port of Jaffa has been shipped by Arabs, the Jews completely abstaining from using that port for either import or export purposes.

The third port from which Palestine citrus fruit is exported is the lighter port of Tel-Aviv. Begun as a temporary jetty to meet an emergency situation in May 1936, this lighter port has since been increasing in importance. Faced with a shortage of food in the spring of 1936 as a result of the

Arabs' refusal to permit them to use port facilities at Jaffa and of sabotage of shipping at Haifa, the Jewish community petitioned the Palestine Government, through the Jewish Agency for Palestine, for permission to load and unload goods on the shore of Tel-Aviv, at a point immediately south of the mouth of the Auja River. The permission was granted in May 1936, and so far more than \$1,000,000 has been spent in construction work by The Marine Trust Limited, organized for the purpose of building the lighter port of Tel-Aviv. The first time citrus fruit was exported directly from Tel-Aviv was during the 1936-37 season, when 3.3 percent of all Palestine citrus exports were shipped from there. In 1937-38, these exports increased to 9 percent, with over 1 million boxes shipped as against 366,000 boxes exported during the previous season.

Three important factors point to the future expansion of Tel-Aviv as a port for citrus exports: the time-saving element, the reduction in handling, and greater safety. At present, for fruit exported from Jewish groves via Haifa it takes at least 24 hours, sometimes 48 hours, from grove to port, whereas from practically any point in the citrus belt fruit may be carried by truck to Tel-Aviv in less than 3 hours. Any time saved after picking and curing is important, especially since the fruit is not exported in refrigerated boats. At present, fruit is sent from grove to railroad station by truck. There it is inspected, loaded in cars, and shipped to Haifa, where it is handled again before being loaded on ships. If sent directly to Tel-Aviv by truck, however, it is inspected there and loaded directly on ships without any further handling. From the safety viewpoint, the Jews point out that the main highway connecting the principal citrus districts with Haifa is not safe, that truck drivers can be attacked, and that the Jaffa section of the road is surrounded by unfriendly Arabs. Although for these reasons the Jews are in favor of expanding the lighter port of Tel-Aviv into a deep-water harbor, it is unlikely that under present economic and political conditions in Palestine anything will be done.

It is estimated that the present total storage and loading facilities of all three ports - Haifa, Jaffa, and Tel-Aviv - during the citrus export months could not exceed 13 million boxes. These facilities may barely be sufficient for handling the 1938-39 exports, and certainly will not be satisfactory in the following years. It is possible, therefore, that either the expansion of the Haifa harbor or the building of a deep-water harbor at Tel-Aviv, or both, may sooner or later have to be considered.

For many years Palestine citrus exports to the United Kingdom were shipped almost entirely in British boats. In recent years, however, Scandinavian shipping companies have joined the British in a conference, which holds a monopoly for the Jaffa fruit trade to the British Isles. Until a few years ago, old British boats were used for carrying citrus fruit. Only recently have newer ships been used. Before the 1936 riots, boats carrying citrus fruit to the United Kingdom stopped first at Jaffa and completed their loading at Haifa. Since the beginning of the 1936-37 season, however, these boats have been divided into two groups: those stopping at Jaffa and loading exclusively Arab-grown fruit and those carrying Jewish-grown fruit from Haifa.

For exports to the Continent, both Arab and Jewish shippers use boats of the Continental Conference of Liners for western and northern Europe, while the Danube countries are served through Italian and Rumanian ships. These boats carry Arab- and Jewish-grown fruit. They stop first at Jaffa, and then complete their cargo at Haifa, stopping sometimes at Tel-Aviv on their way northward.

During the 1937-38 season, all citrus fruit shipped to United Kingdom ports paid a flat rate of 1s.8d. (about 41 cents) per box net. The freight to Rotterdam was 1s.7d. (about 39 cents) per box, net, while that to other continental points was higher. The highest, 3s.3d. (about 81 cents) per box, was to Riga, Latvia.

Citrus fruit exported from Palestine has always been shipped under ordinary stowage conditions, with no adequate provision for satisfactory ventilation. This, coupled with heavy loads, long journeys, and long storage before shipping, has resulted in the arrival of large quantities of decayed fruit at European markets in recent years. This was particularly true of shipment to the United Kingdom during the 1936-37 season, when 130 of the 206 boats loaded with Palestine citrus fruit, under ordinary stowage conditions, carried over 35,000 boxes each. This meant that boxes were stacked more than 13 tiers high and that some fruit had to be stowed on the open decks. Both practices tended to injure the fruit and cause wastage. During the same season, 175 of those 206 boats took from 12 to 18 days to make the journey between Palestine and United Kingdom ports. Three or four weeks therefore elapsed between the time of picking and the time the unrefrigerated fruit reached the British market. Such a long journey is particularly injurious toward the end of the season when the fruit is ripe. Bad shipping conditions and unfavorable weather during the picking season of 1936-37 resulted in heavy losses due to damaged and decayed fruit. Estimates by Jewish citrus-marketing cooperatives, exporting over 5.5 million boxes of fruit during that season, indicate that their total direct losses due to wastage and cost of repacking at ports of destination amounted to about \$1,000,000, or approximately 20 cents per box.

What may prove to be an epoch-making event in the shipping of Palestine citrus fruit to European markets took place in April 1937, when the first refrigerated ship ever to carry citrus fruit from Palestine left Haifa loaded with 45,000 boxes of oranges. It was the Washington Express of the Fruit Express Service, Oslo, Norway, known to the American fruit trade for having carried large quantities of California oranges to Europe. The trip from Haifa to London was made in the record time of 9.5 days and practically all the fruit arrived in perfect condition. This successful experiment in shipping under refrigeration, coming at the close of a costly season, from the standpoint of wastage, has restored confidence to both Palestine exporters and British importers. In 1937-38, 4 percent of citrus exports from Palestine were shipped on refrigerated boats. The principal reason for using refrigerated boats so little during that season was the low prices obtained for the fruit; the cost of freight seemed prohibitive and unlikely to be offset by the saving in wastage. Furthermore, many steamship companies put into service fast, modern, though unrefrigerated, boats, which made the trip from Palestine to British ports in 10 or 11 days. There is no doubt, however, that, as the Palestine citrus production expands, an increasing portion of exports will be shipped under refrigeration.

Inspection and export regulations

The Citrus Fruit Export Ordinance, under which citrus fruit exported from Palestine is now regulated, was first promulgated in 1927 as a result of suggestions made by the Citrus Fruit Committee appointed "to make recommendations for the better preparation and marketing of local citrus and other fruits." This Citrus Fruit Committee is now made up of the Chief Horticultural Officer of the Government of Palestine as Chairman, seven Arab and

seven Jewish members, and one English member. During the 11 years of its existence, the Committee has been responsible for many improvements in the marketing of the Palestine citrus crop, such as organization of a fruit-inspection service, building of storage facilities at railroad stations and ports, improvement of shipping facilities, construction of roads, citrus advertising, research into wastage of fruit and fumigation of groves, and trade relations with other countries.

Since its publication 10 years ago, the Citrus Fruit Export Ordinance has been amended on various occasions. At present, the Palestine Government, through the ordinance as it now stands, regulates the size of the boxes to be used for citrus exports, as well as the number of fruit to be packed per box, fixes the picking and export date for oranges and grapefruit, controls the use of trade brands, etc. Moreover, through the inspection service established by the Ordinance, citrus fruit destined for export must be inspected for quality, maturity, diseases, and pests. To pay for this inspection- and export-regulation service, an export fee of 1.5 mils (about three-fourths of a cent) per box and 1 mil (about half a cent) per half box is levied on all boxed fruit exported from Palestine.

Almost every year, generally 2 or 3 months prior to the opening of the export season, the Government of Palestine, upon the suggestion of the Citrus Fruit Committee, amends the export and inspection regulations of the Citrus Fruit Export Ordinance in accordance with crop and market conditions. The principal regulations for the 1937-38 season, aside from those fixing minimum and maximum counts of fruit and sizes of boxes referred to above (see page 15), were:

1. No oranges shall be exported from Palestine prior to November 20. Oranges intended for export cannot be picked prior to November 15.
2. No grapefruit shall be exported from Palestine prior to October 1.
3. Citrus fruit shall be exported by sea only from the ports of Jaffa (Tel-Aviv is considered here as part of the port of Jaffa) or Haifa and by railway only via Kantara.
4. Citrus fruit intended for export must be inspected for quality, diseases and pests, etc. Each shipment must be accompanied by an inspection certificate when being loaded on a boat.

Government inspectors select at random up to 5 percent of the boxes for examination. If more than 2 percent of the fruit is defective, a total of 10 percent of the shipment must be examined. If the percentage of defects is maintained, the entire consignment must be repacked under supervision of Government inspectors before any of it may be exported. During the 1936-37 season, 211,800 boxes of citrus fruit, or about 2 percent of the total exports of 10,796,000 boxes, were rejected after inspection as unfit for export without repacking. In the repacking process, more than 24,000 boxes were completely discarded. The following were the principal reasons for rejections: Waste, 30 percent; mechanical injuries, 24 percent; scale pests, 9 percent; irregular sizing, 7 percent; Mediterranean Fruit Fly, 3.5 percent.

The byproducts industry

The great increase in citrus fruit production in Palestine in recent years has rendered more difficult the solving of the cull-fruit problem. It

has been estimated that, on an average, culls represent between 15 and 20 percent of the total crop, varying with the particular weather conditions of the season as well as the export regulations in force.

In Palestine the culls of the citrus crop are referred to either as "lemeh" or as "Brarah." The lemeh is the fruit that has dropped off the tree as a result of strong winds or injuries by pests or diseases; and, though the quantity varies from season to season, it is generally estimated to be from 5 to 10 percent of the crop. This type of cull is totally unfit for export and is not favored by the local consumer or the byproducts industry. The brarah, on the other hand, is the fruit that has been rejected in the packing house as a result of grading and sizing. It is either of irregular shape or has suffered from mechanical injury during shipping or transportation; and, though it is also unfit for export (except in bulk, to neighboring countries), it is used to a great extent in the domestic market as fresh fruit or in the form of juices. As a matter of fact, since only the very best quality of Palestine citrus fruit is exported, a visitor is struck by the fact that it is almost impossible to find on the local market the beautiful Jaffa orange he is accustomed to buy in Europe. Brarahs generally represent about 10 percent of the crop. In other words, approximately one-half of the culls are made up of lemeh and the other half of brarah.

Aside from culls, the unexportable oranges from Palestine include oversized fruit. Since the beginning of the 1936-37 season, the export of sizes running less than 120 per box has been prohibited. With a good portion of the citrus acreage still in young trees, it has been estimated that oranges of the 112 and 100 sizes and larger may represent over 15 percent of the annual crop. At present, this would mean an addition of from 1.5 to 2 million boxes of oranges to the unexportable culls. On an average, therefore, it may be said that at present the total quantity of oranges that cannot be exported from Palestine in the form of fresh fruit (brarah and oversized only, exclusive of lemeh) varies between 2.5 and 3 million boxes annually. Since the population of Palestine is not large enough to consume such great quantities of oranges in the fresh form (during the 1937-38 season, fresh orange juice was sold at stands for less than 1.5 cents a large glass), on various occasions the possibilities of a citrus byproducts industry in Palestine have been investigated as a means of utilizing a good portion of this fruit.

The byproducts industry is still in an experimental stage, and only a few commercial plants are worth mentioning. In August 1935, the five largest cooperative societies of Jewish orange growers joined forces with a group that had established a cooperative plant in 1932. The original plant was enlarged to make possible the utilization of a little over 90,000 boxes of oranges a year. This cooperative is the Jaffa Orange Products Company, Ltd., or "Jaf-Ora," and is located at Rehovot, a few miles southeast of Jaffa, as a nonprofit organization for the purpose of utilizing a maximum quantity of fresh citrus fruit that cannot be disposed of either through export or on the domestic market. Oranges used in the "Jaf-Ora" plant are made up almost exclusively of brarahs and oversized fruit. Citrus byproducts produced from both oranges and grapefruit include essential oils extracted from the peel, natural juices, and such minor products as condensed orange pulp and essences. In 1936-37, sales of citrus byproducts by "Jaf-Ora" amounted to about \$25,000.

Another plant is the Assis, Ltd., located at Ramat-Gan, near Tel-Aviv. Although the activities of this company are not confined to citrus byproducts,

the utilization of citrus fruit plays an important part in its output. In fact, it is largely due to this company that orange syrup has become a popular drink in Palestine, the word "assis" in local parlance having become synonymous with natural citrus-fruit syrup. Assis also produces citrus marmalades for both domestic consumption and export, as well as peels in brine, candied peels, and some canned grapefruit and oranges.

A byproducts plant specializing in fresh fruit juices for export is the Fruit Products Company near Rehovot, which started operations on a commercial basis in 1937-38. The owner has a 100-acre grove and obtains his fruit for the manufacture of juices by exchanging his exportable fruit for unexportable oversized and brarah fruit on the basis of 1 ton of exportable to 4.5 tons of unexportable. At present, this plant is the only one of any size in Palestine producing fresh fruit juices for export. Both the plant and the land belong to the firm of A. Goldberg & Sons, of Glasgow, which owns a department store and wholesale houses in England. The plant probably used between 1,500 and 1,600 tons of fruit in 1937-38, out of which it was expected to obtain 2,500 barrels of juice, each barrel containing from 54 to 58 gallons. About 70 percent of this production was of orange juice and the balance of grapefruit juice. The barrels are shipped to Glasgow, where the juice is bottled for sale in England. On an average, about 2.5 tons of fruit produce 1 ton of juice. In the preparation of juices for export, the acidity is raised to 1.3 percent, and potassium meta-bisulphate is used at the rate of one part per thousand.

Although exports of citrus-fruit juice and syrup from Palestine have increased from 15 short tons in 1927, valued at \$675, to 340 tons in 1937, valued at \$149,000, the quantity of fresh fruit utilized by the byproducts industry is still insignificant when compared with the total unexportable fruit. It is estimated that only 100,000 or 150,000 boxes out of 2.5 or 3 million boxes of unexportable fruit are now used by the byproducts plants of Palestine. The industry is going through financial and organizational difficulties, and on various occasions has appealed to the Palestine Government for both financial aid and imperial preference in the United Kingdom market. The principal difficulty facing its development is the high cost of production. This results indirectly from the shortness of the season during which the entire culled product must be utilized. Freight charges and the high cost of containers add to the initial cost of production. Another obstacle to the development of this industry, from the standpoint of exports, is the result of the high tariff barriers in existence in most importing countries. (See appendix for latest changes.)

While the citrus byproducts industry of Palestine is young and may develop, it is unlikely that it will utilize any appreciable quantities of unexportable fruit in the near future. Moreover, the problem of the disposal of unexportable fruit may become more acute if the Palestine Government prohibits the exportation of oranges of the 120 size. This would add between 1.5 and 2 million boxes to the 2.5 or 3 million boxes that are at present unexportable.

Importance of cooperative marketing

Palestine has the most highly developed cooperative system in the Middle and Near East. This cooperative movement is an outstanding characteristic of Jewish colonization in that country. It is broad in its application and covers both agricultural and industrial production, marketing, and credit activities.

With the exception of a few Arab agricultural credit associations founded with Government help, the cooperative movement of Palestine has been promoted and encouraged almost entirely by Jews.

The agricultural marketing cooperatives may be divided into three distinct groups: (1) wine and wine grapes; (2) citrus fruits; and (3) dairy and poultry products, fruits, and vegetables. The first and largest citrus-marketing cooperative organization in the country was established in 1900 by the Jewish Colonization Association under the name of Pardess Cooperative Society of Orange Growers, Ltd., for the purpose of purchasing packing material and fertilizers and of marketing citrus fruit abroad. Other cooperatives have been formed since then, and at the beginning of the 1938-39 season there were seven Jewish citrus-marketing cooperative organizations. During the 1936-37 season, these cooperative associations marketed 50 percent of all the citrus fruit exported from Palestine, or over 82 percent of the citrus fruit exported from Jewish-owned groves (see table 6). It is interesting to note that, while a large percentage of citrus fruit grown by Jews has been marketed on a cooperative basis for many years, the only Arab citrus-marketing cooperative ever formed has never been active.

The Pardess Cooperative Society is by far the largest citrus-marketing cooperative organization of Palestine. In 1936-37, it had a membership of 830, and its exports during that season represented over 27 percent of all citrus fruit exported. The next largest citrus-marketing cooperative organization of Palestine is the Jaffa Orange Syndicate, which was originally formed as a sales organization for two citrus growers' cooperatives, Addir and Apai. In 1936-37, it exported over 12 percent of all citrus fruit shipped from Palestine. During the 1937-38 season, first the Bustan Cooperative Association and then the Herzlia Citrus Growers joined the Jaffa Orange Syndicate, so that at present the latter consists of four citrus cooperative organizations.

Table 6. Exports of citrus fruit by citrus-marketing cooperative organizations in Palestine, 1934-35 to 1936-37 a/

Cooperative b/	1934-35		1935-36		1936-37	
	Quantity	Share of total	Quantity	Share of total	Quantity	Share of total
	boxes	Percent	boxes	Percent	boxes	Percent
Pardess Coop. Soc., Ltd.....	1,620	52.0	1,610	57.5	2,950	54.7
Jaffa Orange Syndicate, Ltd.c/	764	24.4	605	21.6	1,312	24.3
Tnuva Export, Ltd.....	-	-	-	-	401	7.4
Hachaklai Coop. Soc., Ltd.....	206	6.6	152	5.4	321	6.0
Herzlia Citrus Growers, Ltd....	80	2.5	120	4.4	177	3.3
Bustan Coop. Assn., Ltd.....	102	3.2	91	3.2	151	2.8
Palog Coop. Soc., Ltd.....	86	2.7	51	1.8	50	.9
The Jaffa Goldfruit, Ltd.....	41	1.3	23	.8	35	.6
Hyt Pal. Joint Coop. Soc., Ltd.	230	7.3	150	5.3	-	-
Total from cooperatives.....	3,129	100.0	2,802	100.0	5,397	100.0

Compiled from data of the Jaffa Citrus Exchange.

a/ Year ended May 31. b/ All the cooperative organizations listed are members of the Jaffa Citrus Exchange. c/ This is a sales organization for two citrus cooperatives, Addir and Apai. During the 1937-38 season, first Bustan Cooperative Association, Ltd., and then Herzlia Citrus Growers, Ltd., joined the Jaffa Orange Syndicate, Ltd.

In 1929, the principal Jewish citrus exporters of Palestine organized the Jaffa Citrus Exchange for the purpose of negotiating shipping contracts with steamship companies, advising on advertising policies, and in general developing a more efficient marketing system for the Palestine citrus crop. At present all the citrus-marketing cooperative organizations of Palestine are members of the Exchange, together with the 16 Jewish citrus-shipping merchants, partnerships, or limited companies. In 1936-37, the members of the Jaffa Citrus Exchange exported over 60 percent of all citrus fruit shipped from Palestine (see table 7). Although membership in the Exchange is open to all citrus shippers of the country, up to the 1936-37 season no Arab shipper had joined this organization.

Table 7. Exports of citrus fruit by members of the Jaffa Citrus Exchange and total citrus exports from Palestine, 1934-35 to 1936-37

Exporter	Year ended May 31		
	1934-35	1935-36	1936-37
Quantity	1,000 boxes	1,000 boxes	1,000 boxes
Members of Jaffa Citrus Exchange -			
Cooperatives a/.....	3,129	2,802	5,397
Merchants - b/.....			
Associated Orange Growers, Ltd. ..	11	10	155
P. A. Batty.....	127	50	-
Juda Blum.....	110	95	183
Braz Bros.	35	-	-
Z. A. Chelouche (Anglo-Palestine			
Fruit Exports, Ltd.).....	132	71	103
Joseph Hillman.....	49	10	22
Segal & Stahl.....	126	-	-
Erich Ney.....	12	11	10
Stolbow & Pevsner.....	11	10	25
Palestine Orange Export Company..	140	65	141
The Jaffa Citrus Company, Ltd. ..	131	98	161
N. Perlmann.....	41	-	-
Sharon Fruit Corporation, Ltd. ...	23	-	-
Palestine Citrus Exporters, Ltd. :	45	-	-
M. Bashist.....	-	18	39
"Yakhin," Ltd.	-	-	334
Total merchants.....	994	438	1,173
Total members of Exchange.....	4,123	3,240	6,570
Other exporters.....	3,211	2,646	4,226
Total exports.....	7,334	5,886	10,796
	Percent	Percent	Percent
Percentage of total			
Members of Jaffa Citrus Exchange -			
Cooperatives.....	42.7	47.6	50.0
Merchants.....	13.5	7.4	10.9
Total members of Exchange.....	56.2	55.0	60.9
Other exporters.....	43.8	45.0	39.1
Total exports.....	100.0	100.0	100.0

Compiled from data of the Jaffa Citrus Exchange.

a/ For detailed exports by citrus-marketing cooperatives, see table 6.

b/ Including some growers' cooperatives.

The Jaffa Citrus Exchange does not handle the actual selling of the fruit, which is done by the members themselves. Specifically, the Exchange has the following functions:

- (1) To negotiate collective contracts with steamship companies, thus obtaining for its members low freight rates, better space facilities, etc.
- (2) To secure, in view of the unilateral character of the "open door" policy prescribed by the Palestine Mandate, the alleviation or removal of trade and currency restrictions and of prohibitive customs duties in foreign countries affecting Palestine citrus exports. (Such negotiations are conducted by the Jaffa Citrus Exchange with the consent of the Palestine Government, and any concessions obtained by the Exchange from foreign countries benefit all citrus shippers from Palestine, regardless of race or religion.)
- (3) To collect and distribute to its members up-to-date information on the price situation, trade restrictions, etc., in the different markets.
- (4) To represent its members in discussions with the Palestine Government on various matters, such as improvements of road, railroad, and port facilities.
- (5) To initiate or coordinate the participation of its members in Palestine or foreign expositions or fairs. To subsidize scientific research in matters affecting citrus marketing, etc.

Since 1934, when the Exchange began to attack the problem of trade restrictions in foreign countries, it has succeeded in increasing the import quotas for Palestine citrus fruit in a number of countries, while reductions in customs duties were obtained in several.

The activities of the Jaffa Citrus Exchange in Palestine are financed through a voluntary levy paid on every box of fruit shipped by its members. At present, this levy is one-fourth mil (or about 0.12 cent) per box. Traveling expenses in foreign countries to develop markets for Palestine citrus, on the other hand, are paid for through a special levy, pro rata, on each member.

A great deal of the progress made in citrus growing and marketing in Palestine in the last decade is largely due to the united efforts of growers acting through their cooperative organizations. Better methods of production, packing, and marketing have been encouraged and financed by cooperatives. These methods have proved very helpful to growers and exporters, especially during the past two seasons when prices were the lowest in the history of the industry. The cooperative movement is today one of the most important features of citrus growing and marketing in Palestine, and efforts are continuously being made to increase its efficiency.

Financing and selling methods

Two types of loans are granted the citrus growers of Palestine: long-term development loans and seasonal loans. Banks and cooperative organizations supply the bulk of the seasonal loans. In 1937-38, the interest on such loans made by banks varied from 5 to 7 percent. Cooperative organizations borrowed from banks at 5 percent, the lowest interest rate available in Palestine, and charged their members from 0.5 to 1 percent over that amount, while individual growers who borrowed directly from banks paid between 6 and 7 percent interest. Seasonal loans were made up of, first, production loans, which were 2s. (about 50 cents) per box on oranges and 1s. per box on grapefruit; and, second, loans to defray packing expenses, which amounted to 1s.6d. (about 37 cents) per box for oranges and grapefruit.

Prior to 1937-38, it was also the practice with many importers in the United Kingdom to grant seasonal advances to Palestine citrus growers in order to assure fruit deliveries. These loans were generally made on the promise of the grower to supply a certain quantity of fruit, and the average interest rate was about 6 percent. As a result of the large quantities of decayed fruit that reached the United Kingdom in 1936-37 and the decline in prices that followed, however, some English importers lost heavily and were reluctant to make seasonal loans during the 1937-38 season.

For long-term development loans, the Palestine citrus growers borrow from individuals, mortgage companies, and, particularly of late, from the semiofficial Agricultural Mortgage Company. These loans are granted for periods up to 20 years and in 1937-38 the interest rate was 8 percent when the loans were granted by mortgage companies and slightly higher when made by individuals. The maximum legal interest rate in Palestine during that season was 9 percent.

The sale of Palestine citrus fruit in foreign countries is usually handled through brokers or importers in the various consuming markets. The fruit is purchased through either open preseasonal or bill-of-lading advances, f.o.b. steamer, by outright cash purchase, or on consignment. Jewish citrus exporters generally deal both in firm sales and on a consignment basis, while Arab shippers work mostly on consignment.

A large portion of the citrus is sold through foreign brokers and their resident agents in Palestine. The resident agent arranges financial matters on behalf of his firm and grants facilities to the growers. They, in turn, deliver the goods to the agent, who bills them to his various market connections. Some individual growers, however, consign their goods directly to European markets, while the large citrus cooperative organizations maintain their own representatives abroad.

Citrus shipments by the Pardess Cooperative Society are pooled on a fortnightly basis, and sales in foreign countries are handled by the organization. Other cooperatives, however, may have different systems of pooling their members' fruit. Up to the 1936-37 season, exports of citrus fruit by Pardess to the United Kingdom were about equally divided between firm sales and open consignment, while those made to the European Continent were practically all on a firm basis. As a result of losses sustained during the 1936-37 season, however, British importers are unwilling to buy as much on a firm basis as in previous years. It is estimated that in the 1937-38 season less than 20 percent of Palestine citrus exports to the United Kingdom have been sold on that basis.

Upon arrival at United Kingdom ports, Palestine citrus fruit is usually sold either by auction or by private sale. When sold by auction, samples are taken from the fruit on the docks and placed on display in the auction sales room. In 1937-38, the usual handling charge, called consolidated handling charge, which covers everything from the docking of the ship until the sale is completed, with the exception of import duty and broker's commission, was 1s.5d. (about 35 cents)-per box. The broker's commission was normally 3 percent of the sales price. The sales price covers all expenses, including the import duty, except in instances when the fruit is placed in bonded warehouses for reexport to the Continent. Auction sales are usually made ex-wharf, the buyer being given a delivery order, which he, in turn, hands to a transport company to obtain his merchandise.

Private sales are usually made from the broker's own premises. When the fruit is discharged, it is immediately carted from the dock to warehouses owned or leased by the broker. Handling charges and broker's commissions are generally the same as when the fruit is sold by auction. In the United Kingdom, as a whole, about 45 percent of the Palestine citrus fruit offerings are sold through auction, and the remainder through private sales.

Advertising

The increase in citrus-fruit production in Palestine and the short season in which the crop must be marketed have called for an advertising campaign to push sales both in the United Kingdom and on the Continent. In 1932, Jewish citrus growers and shippers, through the medium of the Jaffa Citrus Exchange, submitted to the Palestine Government a proposal for the imposition of a compulsory tax of 1 mil (about half a cent) per box on all citrus fruit shipped abroad, the funds so collected to be used in a campaign to advertise Palestine citrus products in foreign markets. After some opposition from the principal Arab shippers, who, while approving the advertising scheme in principle, wanted the tax levied on the number of acres planted under citrus rather than on the number of boxes exported, the High Commissioner of Palestine issued on November 8, 1933, The Citrus Fruit Advertising Ordinance. The three principal points of this ordinance were:

1. A fee shall be levied and charged on each box of citrus fruit exported from Palestine and intended for sale.
2. The fees collected will form the Citrus Fruit Advertisement Fund to be administered by the Director of Agriculture and Forests with the advice and assistance of a committee.
3. The Citrus Fruit Advertisement Fund shall be used to defray the cost of and expenses connected with and incidental to the advertisement of citrus fruit grown and citrus byproducts made in Palestine.

Following the promulgation of the Ordinance, a Citrus Fruit Advertising Committee was set up, and the advertising fee was fixed at 1.5 mils (0.75 cent) per box. At present, this Advertising Committee consists of the Chief Horticultural Officer of the Government of Palestine as Chairman, a representative of the Treasury, three Jewish and three Arab members, and the English member of the Citrus Fruit Committee (see page 20). The advertising fee has been increased several times since it was first adopted and in 1937-38 was 3.5 mils (or about 1.75 cents) per box, levied at the time of export. For the 1938-39 season, the fee has been reduced to 2.5 mils (or about 1.25 cents) per export box.

The first campaign advertising the citrus fruit of Palestine under Government supervision took place during the season 1933-34. This campaign was of an experimental nature and was devoted mainly to the United Kingdom. Of the \$33,500 spend in advertising during that season, about \$30,000 was used in the United Kingdom, and only about \$3,500 on the European Continent. From this modest beginning, the advertising campaign for Palestine citrus fruit in Europe has gradually developed and in 1937-38, over \$179,000 was spent for this purpose. Of this total, 48 percent, or over \$85,000, was used in the United Kingdom, approximately \$75,000 in 15 countries on the Continent, and the balance in Canada, Palestine, and India (see table 8). The best advertising firms, both in the United Kingdom and on the Continent, are generally

put in charge of the campaign. Of the media used in advertising Palestine citrus fruit in Europe, the most important are daily and Sunday newspapers and magazines, large streamers on busses, large posters in railroad stations, motion pictures, radio broadcasts, displays in fruit shops, distribution of squeezers, etc. For the 1938-39 season, over \$200,000 will be spent for advertising and research in citrus-fruit wastage.

Table 8. Cost of citrus advertising program in Palestine, 1936-37 and 1937-38

Country	1936-37		1937-38	
	Amount	Percentage	Amount	Percentage
	Dollars	Percent	Dollars	Percent
<u>General advertising</u>				
United Kingdom.....	53,900	59.0	85,834	47.8
Continental Europe				
Austria.....	980	1.1	472	.3
Belgium.....	3,920	4.3	11,153	6.2
Czechoslovakia.....	2,940	3.2	6,473	3.6
Denmark.....	-	-	747	.5
Estonia.....	-	-	752	.5
Finland.....	980	1.1	2,590	1.4
France.....	1,960	2.0	6,184	3.4
Holland.....	4,900	5.4	12,945	7.2
Hungary.....	686	.8	1,494	.8
Lithuania.....	-	-	458	.2
Norway.....	2,450	2.7	6,174	3.4
Poland.....	6,370	7.0	9,211	5.2
Rumania.....	1,470	1.6	4,680	2.6
Sweden.....	2,450	2.7	6,373	3.6
Switzerland.....	1,470	1.6	4,980	2.8
Total continental Europe.....	30,576	33.5	74,686	41.7
India.....	3,675	4.0	2,490	1.4
Palestine.....	3,185	3.5	8,862	4.9
Total.....	91,336	100.0	171,872	95.8
<u>Motion-picture advertising</u>				
All countries.....	-	-	7,469	4.2
Total advertising.....	91,336	100.0	179,341	100.0

Compiled from "Hadar," October 1936 and January 1938.

The citrus exporters of Palestine realize more and more the importance of advertising in the marketing of their fruit and are tackling the problem rather thoroughly. The low prices obtained in recent years and the increasing crop may force them to push their activities still further.

The "open door" policy

Since 1922, Palestine has been governed according to the terms of a Mandate approved by the Council of the League of Nations, with Great Britain as the mandatory power. In its trade relations with other nations, Palestine is governed by the following article (18) of the Mandate:

"The Mandatory shall see that there is no discrimination in Palestine against the nationals of any State Member of the League of

Nations (including companies incorporated under its laws) as compared with those of the Mandatory or of any foreign State in matters concerning taxation, commerce or navigation, the exercise of industries or professions, or in the treatment of merchant vessels or civil aircraft. Similarly, there shall be no discrimination in Palestine against goods originating in or destined for any of the said States, and there shall be freedom of transit under equitable conditions across the mandated area."

In other words, the terms of the Mandate specifically state that in its foreign trade relations, Palestine must treat equally all countries that are members of the League of Nations. Under such a ruling, Palestine's tariff regulations at present grant the same treatment to all nations, whether they discriminate against Palestinian products or not. This has resulted in a peculiar foreign-trade situation, which, if continued, may adversely affect the development of Palestine's citrus exports. Thus, in 1935, the total value of all imports into Palestine was about \$90,000,000 while exports (made up to a large extent of citrus fruit) were valued at only a little over \$20,000,000; in 1936, the figures were \$70,000,000 and \$18,000,000, respectively. This 4-to-1 ratio in the passive balance of trade was reduced to 2.7-to-1 in 1937, however, when total imports were valued at about \$79,000,000 as against \$29,000,000 of exports. This passive trade situation has continued without the country's experiencing any financial crisis as a result of the inflow of foreign capital; but there is no way of predicting what would happen if this flow of capital should suddenly cease.

The adverse effect of this "open door" policy on the export trade of Palestine is strikingly illustrated in the following figures showing the value of the trade of Palestine with a few specified countries:

	<u>1936</u>		<u>1937</u>	
	<u>Imports from</u>	<u>Exports to</u>	<u>Imports from</u>	<u>Exports to</u>
		<u>(In thousand dollars)</u>		
United States.....	5,035	110	5,495	175
Rumania.....	5,335	360	5,860	560
Germany.....	10,200	655	13,140	530

It is true that the same Article 18 of the Mandate continues with the stipulation that " * * * the Administration of Palestine may, on the advice of the Mandatory, impose such taxes and customs duties as it may consider necessary, and take such steps as it may think best to promote the development of the natural resources of the country and to safe-guard the interests of the population." Yet, efforts by Palestine citrus exporters to have their Government conclude commercial agreements with other nations based on trade reciprocity have failed. The future trend of citrus exports from Palestine is related to a large extent to the future of the "open-door" policy of that country. (See detailed discussion, page 65.)

Importance of citrus exports

The increase in citrus production in the past decade has greatly altered Palestine's whole economic structure so that at present it is built around the citrus industry. The rapid development of exports is beginning to cause some

concern in the principal citrus-exporting countries, and competition from Palestine fruit promises to be still greater in the near future.

Citrus exports are the most important item not only in Palestine's agricultural exports but in the country's total exports as well. In 1928, the combined value of oranges, grapefruit, lemons, and other citrus fruit exported from Palestine amounted to \$3,186,000, or 43 percent of the value of the country's total exports. In 1937, citrus exports had increased in value to \$21,942,000, representing 74 percent of all Palestinian exports.

Table 9. Value of citrus-fruit exports compared with total exports from Palestine, 1928-1937

Year	Oranges	Grape- fruit	Lemons	Citrons	Total citrus	Total exports	Percentage citrus ex- ports are of total exports
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Percent
1928.....	3,156	4	14	12	3,186	7,345	43
1929.....	2,665	17	19	17	2,718	8,582	32
1930.....	4,411	50	16	15	4,492	9,227	49
1931.....	4,020	183	13	10	4,226	8,156	52
1932.....	5,964	279	22	12	6,277	13,630	46
1933.....	8,258	547	28	10	8,843	14,547	61
1934.....	12,246	1,110	62	20	13,438	20,499	66
1935.....	15,347	1,843	89	22	17,301	20,663	84
1936.....	12,352	1,524	172	22	14,070	18,021	78
1937.....	19,047	2,709	171	15	21,942	29,501	74

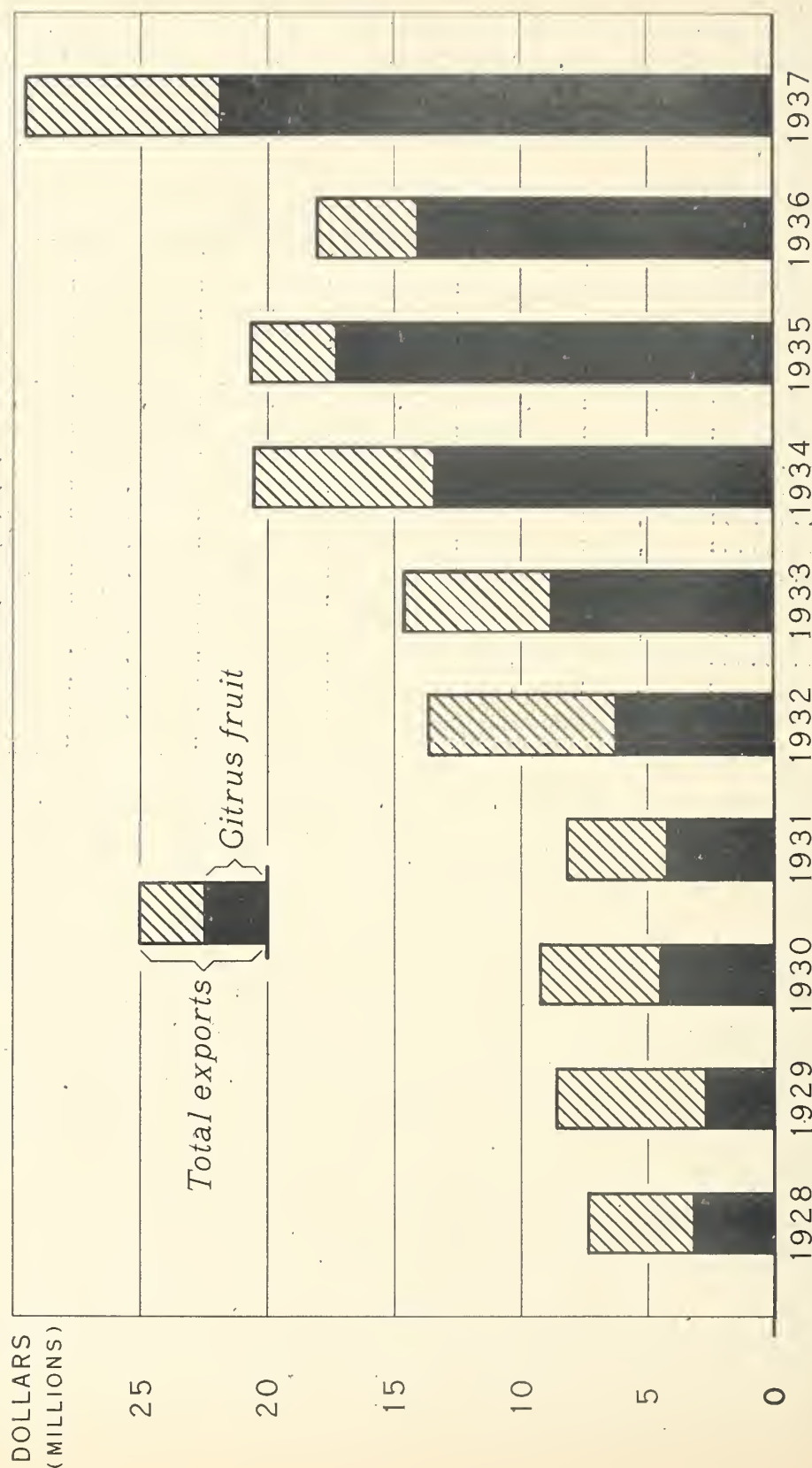
Compiled from the annual and monthly issues of the "Palestine Commercial Bulletin," Department of Customs, Excise, and Trade of Palestine, January 1928 to February 1938. Original value in Palestinian currency converted to dollars at the average yearly rate of exchange.

a/ Both agricultural and industrial.

The large percentage represented by the value of citrus exports in the total export trade of Palestine is unique among all citrus-exporting countries. Outside of Palestine, Spain, which is the world's largest orange exporter, is the only citrus-producing country where citrus exports are an important item in the total export trade. Yet, in 1933, when the share of total exports represented by citrus fruit was the highest in recent years, it was only 25.9 percent. Complete Spanish export statistics for 1936 and 1937 are not available; but it is believed that, as a result of civil-war conditions, citrus exports during these two seasons were not so large as in previous years. During the period 1932-1937, the value of Palestine citrus exports in percentage of the value of all exports was lowest in 1932, at 46 percent, and reached the peak of 84 percent in 1935 (see table 10).

In Italy, the actual annual value of citrus fruit exports (which are made up mainly of lemons) during the 6 years 1932-to 1937 was higher than that of any other citrus-exporting country. Yet, when measured in relation to the value of that country's total exports, the value of Italian citrus exports during the same 6-year period was rather low. It reached its highest level in 1933 when it represented only 5.5 percent of the total.

PALESTINE: VALUE OF CITRUS FRUIT EXPORTS AND TOTAL EXPORTS, 1928-37



U. S. DEPARTMENT OF AGRICULTURE

NEG. 34343

BUREAU OF AGRICULTURAL ECONOMICS

Fig. 30.

In other words, in Spain, which is the world's largest orange exporter, and in Italy, where citrus exports have the highest value of any other citrus-exporting country, the share which citrus exports have in the value of total exports is much below that of Palestine. Although the United States is the world's largest citrus producer and ranks third in importance as an orange-exporting country, the value of American citrus exports in relation to the value of United States exports is less than 1 percent (see table 10).

Table 10. Value of total exports compared with citrus-fruit exports from principal exporting countries, 1932-1937

Country and item	1932	1933	1934	1935	1936	1937 <u>a/</u>
	1,000	1,000	1,000	1,000	1,000	1,000
	dollars	dollars	dollars	dollars	dollars	dollars
Total exports -						
United States.....	1,576,151	1,647,220	2,100,135	2,243,081	2,413,969	3,294,795
Spain.....	59,315	71,664	83,187	79,804	b/	b/
Italy.....	349,131	401,930	447,272	432,093	404,472	548,638
Union of S. Africa:	311,034	284,299	281,415	341,280	531,165	599,523
Brazil.....	180,676	224,578	291,484	240,415	419,446	b/
Palestine.....	13,630	14,547	20,499	20,663	18,021	29,501
Citrus exports -						
United States.....	10,734	10,703	12,879	19,435	18,097	12,915
Spain.....	14,204	18,533	18,723	14,886	b/	b/
Italy.....	16,850	22,298	23,879	23,443	18,234	28,201
Union of S. Africa:	4,489	4,613	6,271	5,750	6,609	10,068
Brazil.....	2,910	4,393	4,835	5,142	6,456	b/
Palestine.....	6,277	8,843	13,438	17,301	14,070	21,942
	Percent	Percent	Percent	Percent	Percent	Percent
Percentage citrus is of total -						
United States.....	0.7	0.6	0.6	0.9	0.7	0.4
Spain.....	23.9	25.9	22.5	18.7	b/	b/
Italy.....	4.8	5.5	5.3	5.4	4.5	5.1
Union of S. Africa:	1.4	1.6	2.2	1.7	1.2	1.7
Brazil.....	1.6	2.0	1.7	1.5	1.5	b/
Palestine.....	46.0	61.0	66.0	83.7	78.1	74.4

Compiled from official sources.

a/ Preliminary.

b/ Not yet available.

Though citrus exports from Palestine represent a large share in the value of the total export trade, other agricultural exports, mainly of grains, edible oils, and hides and skins, represent only 6 or 8 percent of the total. It is more significant, however, that imports of foodstuffs form a sizable portion of total imports. During the 6 years ended with 1937, the value of such imports varied between 20 and 28 percent of that of all imports, and their annual value consistently exceeded that of citrus exports. In other words, Palestine specializes in citrus production to such an extent that until this year returns from citrus growing were higher than from the production of all other crops. This led farmers to continue growing and exporting citrus fruit, at the same time importing required foodstuffs.

The dependence of the country's economy on citrus production and exports was taken for granted and even encouraged as long as returns from citrus sales showed good profits. The danger of binding the country's destiny to the ups and downs of a single crop was minimized, crop diversification was scorned, and growers kept on planting wide areas to citrus. Since 1936-37, however, as a result of the very low prices obtained for Palestine citrus in European markets, there has been an almost complete cessation in citrus planting. This does not mean that citrus production and exports will not increase in the next 5 years, since more than one-half of the area now under citrus is still of non-bearing age or bears large fruit, which may not be exported; but it does give credence to the belief that agricultural circles in Palestine at present are turning toward mixed farming and crop diversification to a greater degree than in the past. Moreover, when it is realized that the annual value of imports of foodstuffs exceeds that of yearly exports of citrus fruits, it will be evident that mixed farming could go a long way toward building a sound agricultural economy, and at the same time correct to some extent an abnormally passive balance of trade.

ORANGE PRODUCTION AND MARKETING

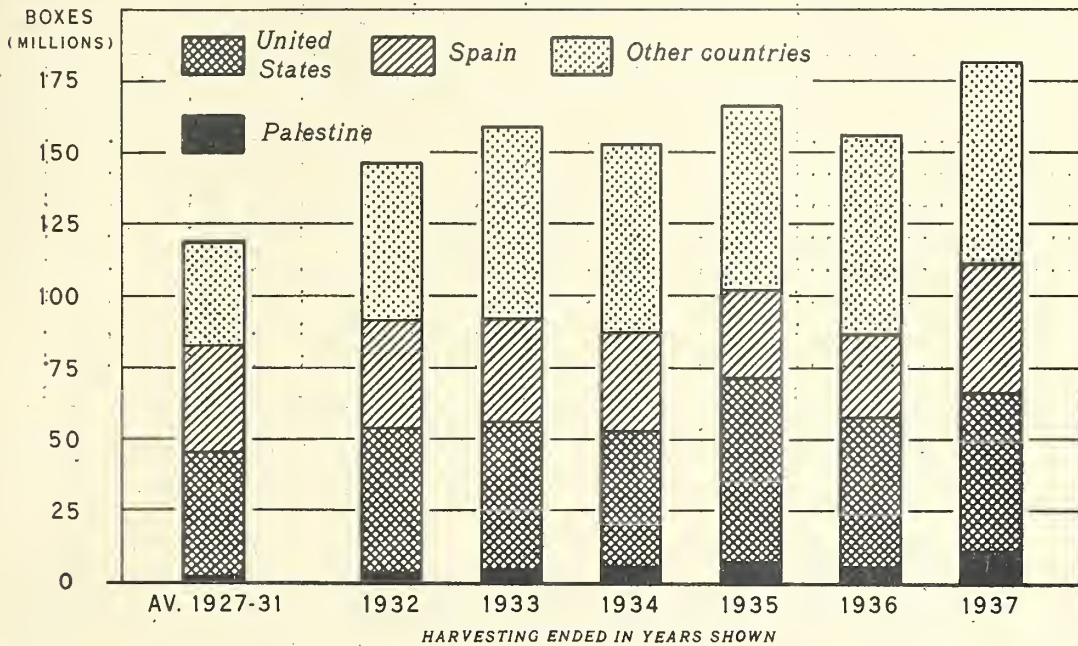
Importance of production and exports

Since the beginning of commercial citrus production in Palestine, oranges have played a predominant part in the industry. The first commercial citrus orchards were set out in oranges, the first citrus exports were made up exclusively of oranges, and at present oranges represent by far the largest portion of the citrus varieties grown in and exported from Palestine. Although there are no accurate statistics on acreage, it is estimated that oranges occupy about 85 percent of the area now planted to citrus and account for about the same high percentage of production and exports.

In 1937, the world orange and mandarin production was estimated at about 200 million boxes, of which the United States, the world's largest orange producer, accounted for 55 million boxes, or over 27 percent of the total. During the same year, the orange crop of Spain, which is the second largest producer, amounted to nearly 45 million boxes, or 22.5 percent of the world's total. Palestine produced about 11.5 million boxes of oranges, or almost 6 percent of the total, and ranked sixth in importance as a world orange producer, following the United States, Spain, Brazil, Japan, and Italy (see table 11). From 1932 to 1937, the largest percentage increase in orange acreage and production took place in Palestine. During that 6-year period, production rose from 4 to 11.5 million boxes, a gain of 188 percent. During the same period, the next largest percentage increase was in Algeria, where production, chiefly of mandarins, went from 1.8 to 2.3 million boxes, an increase of 56 percent. Moreover, while it is estimated that in 1947 the world's orange and mandarin production will have increased by about 25 percent and amount to 250 million boxes, Palestine orange production at the end of the next decade may amount to about 30 million boxes, or an increase of 160 percent over the 1937 production.

In 1937, it was estimated that winter oranges represented about 70 percent of the world's production, or 140 million of a total 200 million boxes. As a winter-orange producer, Palestine ranked fourth in the world, after the United States, Spain, and Italy. During that year, Palestine production (which is made up almost exclusively of winter oranges) represented 8.2 percent of the world's winter-orange crop.

ORANGES AND MANDARINS: ESTIMATED PRODUCTION IN PALESTINE, UNITED STATES, SPAIN, AND OTHER PRINCIPAL EXPORTING COUNTRIES, AVERAGE 1927-31, ANNUAL 1932-37

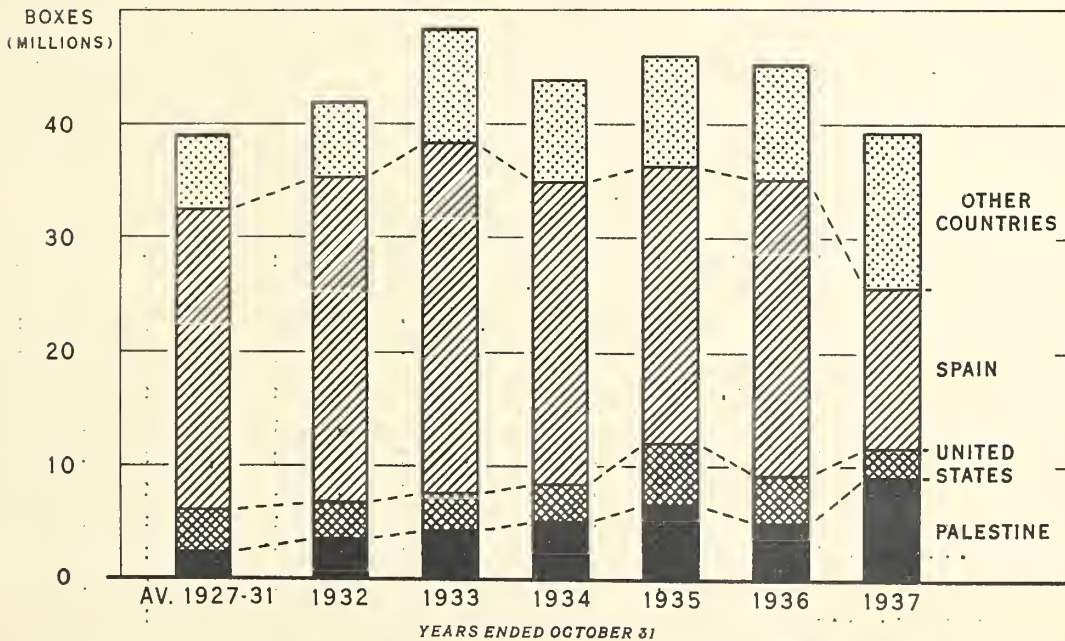


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Fig. 11.

ORANGES AND MANDARINS: EXPORTS FROM PALESTINE, SPAIN, UNITED STATES, AND OTHER COUNTRIES, AVERAGE 1927-31, ANNUAL 1932-37



U. S. DEPARTMENT OF AGRICULTURE

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Fig. 12.

Table 11. Estimated production of oranges and mandarins in principal exporting countries, average 1927-1931, annual 1932-1937 a/

Country	Quantity						
	Average : 1927-1931:	1932	1933	1934	1935	1936	1937
	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	boxes	boxes	boxes	boxes	boxes	boxes	boxes
United States.....	43,165	50,164	51,415	47,374	63,988	52,073	55,174
Spain.....	37,368	37,900	36,109	34,400	30,458	b/29,149	b/44,823
Italy.....	8,760	10,260	16,138	10,263	11,367	10,148	13,188
Brazil.....	12,346	27,588	32,642	36,281	36,104	36,039	c/36,500
Japan.....	11,213	12,496	13,053	13,943	12,164	17,274	c/15,000
Palestine d/.....	2,560	4,000	5,000	6,000	7,300	6,000	11,500
Union of South Africa d/	2,000	2,500	2,600	2,800	2,900	3,300	3,000
Algeria.....	1,880	1,807	2,398	2,246	2,190	2,417	2,802

Compiled from official sources.

a/ Harvesting ends in year shown. b/ Preliminary. c/ Rough estimate. d/ Estimated from exports with allowance for local consumption and waste.

It is mainly as an orange exporter, however, that Palestine holds an important position. During the 6-year period 1932-1937, and with the exception of the year 1933, it was the world's second largest orange exporter, coming after Spain (see table 12). During the same 6-year period, orange exports from Palestine increased from 3.5 million boxes, representing 8.6 percent of world exports, in the year ended October 31, 1932, to 9.2 million boxes, representing over 23.4 percent of world exports during the year ended October 31, 1937. Of all exporting countries, Palestine also showed the highest percentage increase in exports during those years, registering a rise of over 163 percent from 1932 to 1937, compared with 148 percent in the case of Italy. Civil-war conditions in Spain and short crops in the United States, on the other hand, reduced exports from those two countries during 1937 to less than their respective totals in 1932. Moreover, with the exception of 1936, Spain's share in the world's exports decreased yearly from 1932 to 1937.

Table 12. Exports of oranges and mandarins from principal countries, average 1927-1931, annual 1932-1937

Country	Year ended October 31						
	Average : 1927-1931:	1932	1933	1934	1935	1936	1937
	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	boxes	boxes	boxes	boxes	boxes	boxes	boxes
United States.....	3,772	3,203	3,394	3,296	5,425	4,209	2,488
Spain.....	26,353	28,475	30,677	26,522	24,360	25,940	14,004
Italy.....	3,695	1,819	4,705	2,722	3,023	2,339	4,505
Palestine.....	2,335	3,585	4,229	5,158	6,625	4,992	9,191
Brazil.....	579	2,049	1,930	2,557	2,634	2,641	3,227
Japan.....	495	395	635	892	918	900	a/
Union of South Africa..	1,171	1,802	2,026	2,230	2,103	2,383	3,704
Algeria.....	550	470	774	474	783	1,754	2,147

Compiled from official sources.

a/ Not yet available.

Factors affecting production

In the absence of a complete survey of the Palestine citrus industry, it is not possible to show accurately the distribution, by acreage and production, of the country's orange groves. Estimates have been made, however, which give an idea of the importance of orange production in each of the nine citrus zones defined above (see page 6 and figure 1). One of the outstanding experts on citrus production in Palestine ^{3/} estimates that orange plantings account for approximately the following percentages in the various citrus groves of the country:

- Zone 1 - 90 to 95 percent of the Arab- and a maximum of 70 percent of the Jewish-owned groves
- Zone 2 - 90 percent in the southern portion, through Petach Tikvah, and about 75 percent in the northern portion called the Sharon.
- Zones 3 and 4 - Over 90 percent
- Zones 5 and 6 - Nil
- Zone 7 - Practically nil (some oranges along the western shore of the Sea of Galilee)
- Zone 8 - Over 90 percent
- Zone 9 - Almost nil

It is significant that over 70 percent of the Jewish-owned orange groves are located in zone 2, that is from Rehovot to Hedera (see figure 1), while nearly all the others are found in the northern portion of zone 1, and in zone 3. The majority of the Arab-owned orange groves, on the other hand, are located in the southern portion of zone 1, the southern, southeastern, and northeastern portions of zone 2, and the northern portions of zones 3 and 4. The small German orange groves of Palestine are found in the central portion of zone 2, in the north of zone 4, and in the central Jordan Valley, or zone 8.

Varieties grown

The Shamouti or Jaffa orange: Palestine has avoided a mistake frequently made in citrus-producing countries, that of planting many kinds and varieties of oranges. From the beginning, the Palestine orange grower realized that the fewer the varieties, the less complicated his marketing problem.

The principal variety of orange produced in Palestine is the Citrus aurantium, subvariety Sinensis, known locally as Shamouti and commercially as the Jaffa orange. The tree usually bears prolifically, the oranges tending to grow in clusters. The fruit is oval in shape and has a deep orange color. It is juicy and full-flavored, with rarely more than three seeds. The skin is thick, which makes the orange keep well and stand long-distance transportation. Maturing in the middle of the December-March season, it can be picked toward the middle of November and marketed from the end of November to about the end of April. Practically all of the oranges exported from Palestine are of this variety.

According to the orange lore of Jaffa, many years ago the Shamouti suddenly appeared in a Jaffa orange grove. At that time petroleum was not known, and oval earthenware oil lamps, called Shamouti in Arabic, were used. The new

^{3/} Dr. A. I. Weinstein, Chief, Division of Horticulture, The Jewish Agency Agricultural Research Station, Rehovot, Palestine.

oval-shaped orange was therefore given the name of Shamouti. Whatever its origin, the Shamouti orange as far back as 1880 had supplanted all other varieties in and around Jaffa.

The Beledi orange: Another orange grown in Palestine on a small scale is known as the Beledi (Arabic for local or native). This orange is round, smaller than the Shamouti, juicy, and seedy. Because of its very thin skin, the Beledi orange is difficult to handle and cannot be shipped long distances. For this reason it does not enter into the export trade but is consumed locally. The Beledi orange tree does not grow so large as the Shamouti and has smaller leaves; it may be grown in nearly all sections of Palestine. There are many evidences in the old orange groves of Palestine that the Shamouti originated as a bud variation of the Beledi. Some citrus growers believe, therefore, that both oranges are of local origin. Others think that the Shamouti was brought into Palestine from foreign countries.

Other varieties: As the Shamouti orange is a midseason variety, Palestine citrus growers have attempted in recent years to supplement it with both early and late-ripening varieties in order to extend the export season. As a late-ripening variety, the Valencia orange may become of some importance in the citrus export trade of Palestine. It matures later and remains on the tree longer than the Shamouti. There has been little planting of Valencias, but in recent years they have been grafted, to some extent, on young grapefruit trees. See discussion on page 66.

The Washington Navel, which grows well and is said to bear heavy crops under Palestine conditions, matures about a month earlier than the Shamouti and could be shipped in November-December. In recent years, it has been budded in a few citrus groves and may become a commercial export variety in the future. The principal factor militating against the propagation of both the Washington Navel and the Valencia orange in Palestine, however, is infestation by the Mediterranean Fruit Fly. This pest attacks both the early ripening and late-maturing oranges, especially when they are still on the tree in the spring.

Another orange grown in Palestine is the Citrus bigaradia (Khush Khash in Arabic), a sour orange cultivated exclusively for seedlings as stock upon which to graft citrus varieties.

While there are no official statistics available, it is estimated that of the orange varieties now grown in Palestine the Shamouti or Jaffa orange constitutes over 90 percent of the total, Valencias from 5 to 7 percent, and Beledi and Washington Navels the balance.

Management of groves and cultural practices

The supervision of farm operations in the orange groves of Palestine varies with the type of ownership. The small owner who works his own orchard is generally responsible for both labor and management. The resident owner, on the other hand, attends only to the administration of his grove and leaves the actual supervision of the field work to a salaried foreman, who is usually paid by the month. The absentee landlord, however, places the complete management of his grove in the hands of a manager or contractor, who performs the functions of the owner. He is paid either a straight monthly salary or is on a contract basis per acre of management or cultivation. In the case of a few young orange groves of Palestine, agricultural companies undertook to plant the trees and bring them to bearing age at so much per acre.

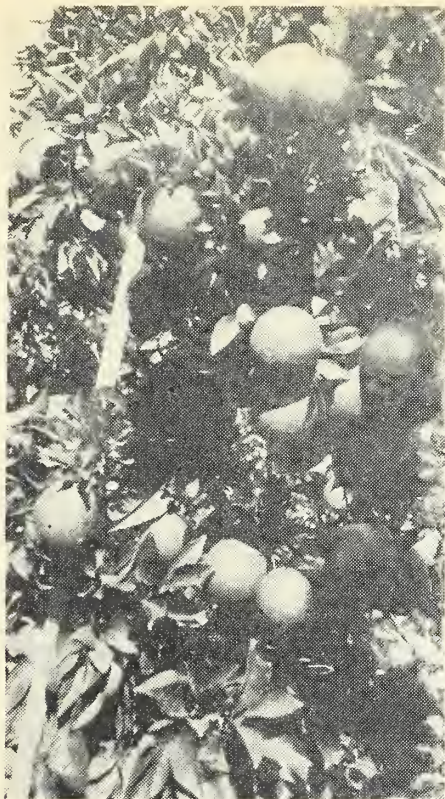


Fig. 13. Clusters of 7-year old Shamouti oranges on sour stock in Jewish settlement of Rishon-le-zion, about 12 miles southeast of Jaffa. They are planted 240 trees to the acre and yield over 650 export boxes per acre. Note pole used to prevent tree from breaking under load.



Fig. 14. Five-year old cypress (*cupressus pyramidalis*) windbreak in an orange grove northeast of Jaffa. This is the common windbreak in Palestine. Note weed patch in center to be plowed under.



Fig. 15. Clusters of 8-year old Shamouti oranges on sweet lime in Jewish settlement of Gan Chaim, 17 miles northeast of Jaffa. Planted on medium loam soil, 160 trees per acre, it yields 650-700 export boxes per acre. Note pole used to prevent tree from breaking under load.

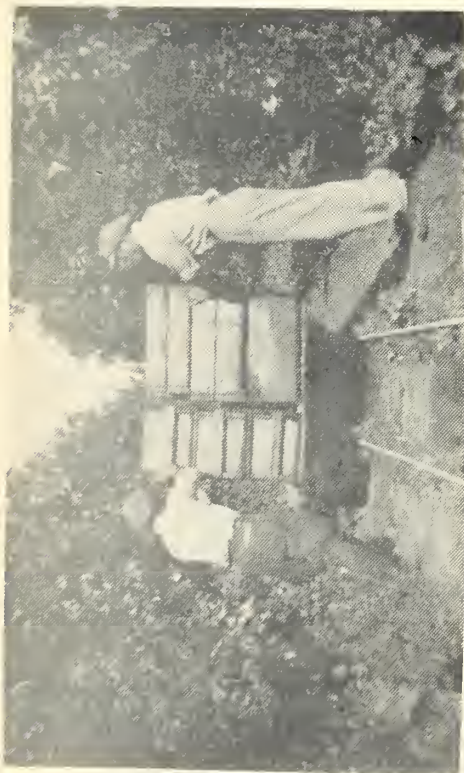


Fig. 16. Narrow-gaged trolley used in a 250-acre Jewish orange grove, northeast of Jaffa. It is used to carry loaded field boxes from orchard to packing shed.

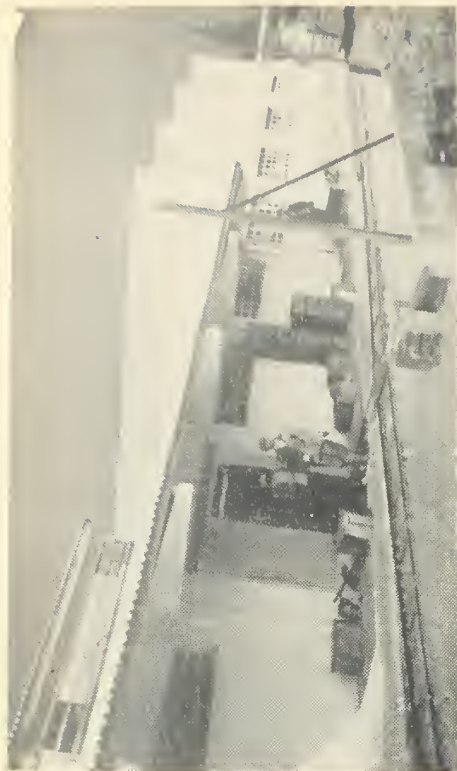


Fig. 17. One of the four or five central packing houses of Palestine built in 1933 in the Jewish settlement of Gan Chaim. In 1936-37, 50,000 boxes of citrus fruit were packed here. Note saw-toothed roof bringing all the light from the north; also narrow-gaged rail to carry fruit inside.



Fig. 18. Orange packing under the stairway of the house of an Arab orchard owner in the Jaffa district.



Fig. 19. Inside the central packing house pictured above. Sorting and wrapping are done by girls, while men do the packing.

Rootstock and planting density: In Palestine, oranges are budded on two types of stock, the sweet lime or sweet lemon, and the sour orange. The use of each stock was recognized early in the development of the citrus industry, the sweet lime for light and the sour orange for heavy soils.

The sweet lime (*Citrus limetta*) is, and always has been, the most commonly used stock for orange growing in Palestine. It produces relatively small trees, which are precocious and consistently heavy bearers. They produce a fairly good crop in the third year after budding. The use of sweet lime, however, has the following disadvantages: First, the tree degenerates early, 15 and 25 years for Valencia and Shamouti oranges, respectively, being very old; second, Shamouti oranges on sweet lime have a tendency, in the early years, to produce fruit with a thick rind; third, the root stock itself is subject to disease. These disadvantages have been outweighed by the desire of growers to obtain quick returns on their investments. It is estimated that about 90 percent of the Shamouti and 10 percent of the Valencia oranges produced in Palestine (outside of the Acre district) were budded on sweet lime.

The sour-orange stock produces a larger, more vigorous and longer-lived tree than the sweet lime, with a better-quality fruit, which grows singly rather than in clusters. Moreover, it is much more resistant to trunk and root diseases than the latter. Its disadvantages, however, are, first, that it comes into bearing much later than the sweet lime, especially with the Shamouti orange, and does not bear a crop for from 7 to 9 years after budding; second, that it has a tendency toward alternate bearing, with large crops of fine, thin-skinned fruit in the on-years and very small crops in the off-years; third, that it is much more sensitive to adverse climatic conditions than the sweet lime, and in years of severe desert winds most of the crop may be lost. Largely because it is so late in beginning to bear, sour-orange stock has been held, especially in recent years, in much less favor than the sweet lime. In the 1927-1932 period, however, when wide spacing was used in planting orange trees, sour-orange stock was used more than ever before or since. It seems premature, on the basis of experience in Palestine, to state definitely which of the two types of stock now used is best suited for the Shamouti orange, from a long-time standpoint.

Many orange growers in Palestine have their own nurseries, while others buy their stock from commercial nurseries. During the 1933 and 1934 planting boom, nursery stock was quite expensive, reaching as high as \$1 for a year-old orange bud. In 1937-38, however, when there was little demand for nursery stock, an orange bud of that age sold for about 25 cents.

Despite the fact that citrus experts visiting Palestine advised the planting of budded trees, which practice was followed on extensive areas from 1928 onward, unbudded trees are still quite generally planted and later budded in the grove.

A typical characteristic of the old orange groves of Palestine is density of planting. In some of these orchards, trees are set 10 or 12 feet apart, while in others they are only 7 feet apart. This close planting, as well as the use of sweet lime for stock, has resulted in the prevalence of small orange trees. Moreover, since the land in these old groves is almost continually shaded, gummosis diseases are widespread. In orchards planted from 1927 to 1931, however, there was a tendency toward increasing the distance between trees; during that period, trees planted averaged 160 per acre. It

was then thought that machinery could be profitably used in Palestine orange production and that the decrease in yield could be made up by savings in labor costs. It was soon discovered that, with the great supply of inexpensive hand labor, closer spacing between trees meant more boxes at lower cost than could be obtained with machine cultivation necessitating greater distances between trees. Beginning with 1932, orange growers started planting their trees closer together, and since have usually planted from 200 to 240 trees per acre. In general, however, trees budded on sour orange are farther apart than those grafted on sweet lime.

Farm practices and irrigation: A great majority of Palestine orange growers employ hand labor exclusively. A very heavy, large, short-handled hoe, known in Arabic as a turia, is used in most groves for cultivating the soil, making basins, and turning under cover crops. In some of the young groves, horse plowing and cultivation are used, but they are replaced by manual labor as soon as the trees reach the age of 5 or 6 years. In a few of the large Jewish-owned orchards, where there is wide spacing between trees, tractors replace hand labor in field operations. When tractors are used, both machinery and tools are almost exclusively American-made and are of the same type as those used in citrus production in the United States. Until about 1930, German-made plows were commonly used; but they have been replaced by American disks, which have been found more satisfactory.

Clean culture and the absence of weeds are characteristic of orange groves in Palestine (especially in Jewish-owned groves), which remind the visitor of the California and Florida citrus orchards. It has been stated, however, that orange growers in Palestine cultivate their groves much deeper than necessary and that this may be one of the factors of high-labor costs per acre.

Oranges produced in Palestine are grown under irrigation, and basin irrigation is the general practice. An individual basin is usually made by hand for each tree, the latter standing between basins, especially in the newer groves. If the tree is in the basin, a collar is built around it to prevent it from touching the water. In about 2 percent of the area planted to oranges, especially in large groves, furrow irrigation is used, and the furrows are usually made by tractors. In a very few cases, growers also use flooding to irrigate their groves.

Many agricultural experts visiting Palestine have stated that too much water is used, especially on heavy soils, and that such an overirrigation is one of the principal causes for the spread of gummosis diseases in that country. In general, the average quantity of water applied on an acre of land planted to citrus fruit is about 20 acre-inches a year. From 6 to 20 irrigations are practiced during the season, with the period between applications varying from 10 to 45 days.

Cover crops and fertilizers: Both animal manure and commercial fertilizers are used in Palestine orange growing. Cover crops are grown in Jewish groves for the first 5 years but seldom thereafter. The principal cover crops used are lupines (*Lupinus* sp.) on the light soils and horse beans (*Vicia faba*) on the heavy soils. These are sown with the first autumn rains and are ready to be plowed under during their blossoming period in January. Arab orange growers, on the other hand, plant vegetable intercrops in their young groves.

The most common type of organic manure is sheep or goat manure purchased by citrus growers mainly from the Arab peasants and Bedouins of Palestine, although in recent years some quantities have been imported from neighboring countries, especially from Syria. Applications vary from 35 to 150 pounds per tree, with 75 pounds representing an average dressing. Large quantities of cattle manure are also used.

In chemical fertilization, the common practice is to apply complete fertilizers. In recent years, however, increasing emphasis has been laid upon the use of nitrogen, and many orange growers now use nitrogen exclusively. While the necessity for the application of phosphates and potash has never been conclusively proved, it is true that grass crops readily respond to such applications.

Average seasonal fertilizer applications recommended by the horticultural stations and generally adopted in the treatment of trees in large, full-bearing groves are as follows: ^{4/}

<u>Time of application</u>	<u>Type of fertilizer applied</u>	<u>Pounds per tree</u>
Mid-March	Sulphate of ammonia or nitrate of soda	0.88
May	Sulphate of ammonia, nitro-chalk, or nitrate of soda	0.66
July-August	Sulphate of ammonia, nitro-chalk, or nitrate of soda	0.66
September-October	Goat, sheep, or stable manure	66.00
	Double superphosphate (40 percent)	0.77
	Sulphate of potash	0.55

Wind and windbreaks: Three kinds of winds blow in Palestine during the orange-growing season: strong west winds; hot east winds, known as the "Khamseen"; and cold north winds. The west winds hit the trees during the blooming period and when the fruit is ripe. If they blow during the blooming season, the sea salts with which they are charged burn the young foliage and blossoms. In the wintertime they cause ripe fruit to drop, throw trees out of shape, and cause other mechanical injuries in the groves. The hot east winds affect orange production through increased evaporation of soil and tree parts. These winds usually occur for a few days at the end of April or early in May and again in September or October. When they last for any length of time, they cause great damage to the citrus crop. The cold winds from the north, when prolonged, chill the trees and affect the normal functions of flowers and leaves.

It is interesting to note that, although Palestine orange groves suffer from these three types of winds, with damage to the crop estimated in some exceptional years as high as 20 percent, the use of windbreaks is not general. In the old groves, where close planting is the rule, the orange grower pays little attention to winds, as he believes that they affect only the outlying trees. Even in the newer groves, where the distance between trees is wider and where the problem of wind protection is more important, only a few growers

^{4/} Williams, R.O., "The Citrus Industry in Palestine," The Empire Journal of Experimental Agriculture, Oxford, July 1938, Vol. VI, No. 23, page 232.

use windbreaks. At first eucalyptus trees (*Eucalyptus* spp.) were used for the protection of groves, but at present the cypress (*Cupressus pyramidalis*) is most generally used as windbreak. It is usually planted at distances varying from 3 to 10 feet, in one or two rows, and lightly topped every 2 years.

Size of groves and average yields

Official statistics on the distribution of orange groves according to size are not available for all Palestine. Some information has been compiled, however, regarding the Jewish-owned section of the industry, which represents about 60 percent of the total. The Jewish Agency for Palestine in its last "Statistical Survey of Jewish Agriculture in Palestine" indicated that in 1936 there were 5,075 Jewish-owned citrus groves, besides 2,637 mixed farms where some citrus fruit was produced. The citrus groves surveyed varied in size from one-quarter of an acre to 60 acres. Of the 3,876 groves reporting during that year, 11 percent had an area of less than one acre; 48 percent, from 1 to 4.9 acres; 30 percent, from 5 to 12 acres; 8 percent, between 12.5 and 25 acres; and the balance of 3 percent over 25 acres. The preponderance of very small groves in the Jewish-owned section of the citrus industry is thus clearly indicated and is due to the high cost of land suitable for orange production and the limited funds of the Jewish immigrant who makes orange growing his profession. The large number of small groves also explains the necessity for pooling small orange crops for export and the extensive development, in the Jewish section of the industry, of citrus-marketing cooperative organizations. Although no survey of Arab-owned orange groves has been made, it is the general opinion in Palestine that the percentage of groves less than 5 acres in size is not so large as in the case of Jewish-owned orchards.

There has been a tendency in recent years among both Arabs and Jews, however, to reduce further the size of their orange groves. A grove of 6-8 acres formerly was considered a good-sized orchard, but most of the groves that have been planted since 1933 vary in size from 2.5 to 4 acres. The average size of orange groves in Florida and California in 1936, on the other hand, was 30 acres and 9 acres, respectively. The distribution of groves in 85 percent of the California orange belt, according to average sizes, was as follows: 5/

<u>County</u>	<u>Average size of groves</u>	<u>Percentage of total acreage</u>
	<u>Acres</u>	<u>Percent</u>
Tulare	17.5	15
Orange	11.0	28
Riverside	10.0	8
San Bernardino	8.5	15
Los Angeles	6.5	19

These averages indicate where the large groves are located but do not show the minimum or maximum for comparison; it is evident, however, that groves in California are in general much larger than in Palestine.

More trees per acre are planted in the Palestine orange groves than in those of the United States. The number of trees in Palestine orchards varies

5/ Lack of information does not permit a similar comparison with Florida.

from 160 to 400 to the acre, compared with an average of 88 per acre in California and 65 in Florida. In the old, closely planted orange groves of Palestine where in some cases it is almost impossible to walk erect, between 250 and 400 trees to the acre were planted by both Jews and Arabs. These densely planted orchards represent approximately 10 percent of the present orange acreage. Orange groves set out with about 160 or 180 trees per acre represent about 25 percent of the total orange acreage, while those with from 200 to 240 trees per acre, which in recent years have become the general rule, represent about 65 percent of the total.

Table 13. Estimated average orange yields per acre in Palestine for groves 5-12 years old

Age of grove	Estimated yield per acre	Estimated exportable surplus per acre
	<u>Boxes</u>	<u>Boxes</u>
5 years.....	60 to 100	43 to 80
6 years.....	100 to 140	80 to 110
7 years.....	130 to 220	145 to 175
8 years.....	250 to 300	200 to 240
9 years.....	320 to 350	250 to 280
10 years.....	350 to 400	280 to 320
11 years.....	400 to 450	320 to 360
12 years and over.....	450 to 500	360 to 400

Estimated in the Bureau of Agricultural Economics, United States Department of Agriculture.

The maximum yield for a full-bearing, 11- to 12-year-old orange grove in Palestine is estimated by many to be as high as 800 boxes per acre, with many old groves at present producing an average of about 600 boxes to the acre. Yields range from 120 boxes per acre for a 6-year-old grove to an average of 475 boxes for groves 12 years old and older, compared with from 200 to 220 boxes per acre in a 12-year-old grove in California and less in Florida (table 13). It is generally agreed in Palestine that an orange grove in full bearing produces over 400 boxes per acre, of which 320 boxes are of exportable fruit, and the balance are of oversized fruit and culls. Moreover, in Jewish-owned groves, where efficient methods of production generally prevail, orange yields are higher than in Arab orchards having the same number of trees per acre.

Although the United States produces fewer boxes of oranges per acre than Palestine, the yield per tree is higher. In 1937-38, the estimated average yield per bearing tree, 5 years old and over, was 2.2 boxes in California and about 2 boxes in Florida, compared with an average of 1.5 or 1.7 boxes in Palestine.

Diseases and pests

The greatest losses to the orange growers of Palestine from tree diseases are due to two types of infection: that caused by physiological disorders, and that by parasitic diseases. The two most important physiological diseases are Xyloporosis and Little Leaf. Xyloporosis, commonly known as the New Disease (although it is an old-timer), is a disease of the sweet-lime stock itself, causes great damage to oranges budded on that stock, and is spread throughout all the orange zones of Palestine. It has not yet been

possible to determine what causes this disease, but observations show that budding high on the trunk, on the southwest side of the tree, or on a single stem seems to favor its spread. The effects of the disease on the orange tree are cessation of growth of the root stock and formation of sunken areas, primarily below the bark, extremely large and tasteless fruit, and rapid degeneration of the tree. A large number of trees die from this disease. In some groves as many as 90 percent of the trees are affected, but only between 5 and 10 percent have to be replaced. The only method of control that can save the tree, if employed in time, is inarching. A certain degree of success has been obtained by inarching seedlings into the stems or budding them onto the roots of the diseased trees.

Little Leaf, which causes heavy losses to orange growers, seems to be due to drought conditions. It appeared in severe form following the unusually prolonged "Khamseen" or hot-wind periods of 1928 and 1937. It affects primarily the Shamouti or Jaffa orange, although Valencias are also attacked. Trees affected with Little Leaf are poor fruit bearers with few branches and small leaves that are appressed to the stem. The end of the blossom is soft and mushy, and the fruit is lopsided, watery, and of insipid taste. In years of normal weather conditions, only about 1 or 2 percent of the trees are affected with this disease, but 10 or 15 percent are affected when hot winds follow fall budding. No method of combatting this disease is known in Palestine. When affected, the trees are pulled out and replaced.

Of the parasitic diseases attacking the orange tree, those causing greatest losses are Gummosis, Blight, Die-Back, and Collar and Root Rot, all of which seem to be various aspects of related diseases. They may become serious under adverse cultural practices, such as dense and deep planting, heavy soil conditions, and bad drainage. They may be successfully controlled by pruning the diseased tree parts, by whitewashing and spraying with Bordeaux mixture, and by improving general orchard conditions.

In some years, the diseases attacking the orange fruit of Palestine cause great losses to growers. In 1936-37, fungi causing fruit decay were responsible for the loss of about 30 percent of the crop. The principal fruit diseases are Green and Blue Mold, Stem-End Rot, and Brown Rot.

Green Mold is the most serious of fruit rots in Palestine and is spread throughout the orange belt. It is due mainly to picking in the rainy season and lack of cleanliness in picking and packing operations, transportation over dirt roads, etc. In years of normal weather conditions, about 4 percent of the fruit is affected; in bad years from 10 to 20 percent may be lost. In 1936-37, for instance, heavy rainfall, followed too soon by picking, packing, and transportation, resulted in an epidemic of this disease, which affected about 20 percent of the crop. The only methods of control in use are careful picking and handling, and cleaning and disinfecting of packing houses. While borax is perhaps the most efficient of disinfectants, the fact that the British Government does not allow the entry of borax-treated fruit prevents orange growers from using it. Cooperatives coordinate their methods of control and are generally successful, but sanitary conditions in many Arab groves are such that control cannot always be enforced. Government sanitary inspection of fruit at shipping points and the sending, since the beginning of the 1937-38 season, of sanitary officers to groves to assist growers in improving their picking and packing conditions may help reduce losses from Green Mold in the future.

Blue Mold is not very serious in the orange belt of Palestine. Moreover, there is not enough information on the state of the fruit when it reaches foreign markets to determine the prevalence of this disease in Palestine.

Stem-End Rot, which results from the same diplodia that cause blight and stem gummosis of trees, starts in the grove and becomes serious during shipping. It occurs throughout the orange belt, especially in old, densely planted groves and in those on heavy soil. In normal years, this disease affects between 3 and 4 percent of the crop, and, in bad years, 10 or 15 percent of the total. It is generally controlled by pruning and burning the diseased branches. If done regularly, this method is very successful.

Brown Rot, which is caused by the same phytophthora that result in trunk and collar gummosis of trees, is found mainly on the lower fruit. Excessive rains and heavy soil are favorable for the spread of this disease. If the lower fruit is picked prior to heavy rains and tree gummosis is treated, this disease can usually be overcome. In normal years, from 2 to 3 percent of the crop is affected by Brown Rot.

The native insects attacking the Palestine orange are few and unimportant. Most of those found in orange groves are species known in other orange-producing countries. It should be noted from the outset, however, that one of the outstanding features of orange entomology in Palestine is the somewhat mild form of infestation caused by most major citrus pests. This is due to two principal factors: first, the small percentage of lemons produced and the high nutritional resistance of Palestine oranges to almost all pests; and, second, the "Khanseen" or hot east wind, which reduces the pest population to a minimum.

The principal insects and pests attacking oranges in Palestine are the California Red Scale, which is widespread throughout all orange zones, except the fourth, and which is generally well controlled; the Florida Red Scale, which is prevalent in Hadera, in the extreme north of the third zone, and in the fourth to seventh, inclusive, and which is not satisfactorily controlled; the California Black Scale, which is most prevalent in the northern portion of the first zone and the southern portion of the second, where control by spraying is not general; the Purple Scale, which is just getting to be a problem in the second zone and for which no definite type of control has been established; and the red spider, which is found in all orange zones of Palestine but which is well under control.

The Mediterranean Fruit Fly as a factor affecting orange production varies in importance from year to year. In some seasons it does no damage, while in others it affects the crop substantially, especially in districts where the fruit ripens early or where it stays on the trees late in the spring, as the attacks generally occur at the beginning and end of the season. Thus far, Valencias have not been seriously affected by the Fruit Fly, but they have not been left long on the tree. Washington Navels, on the other hand, which ripen somewhat earlier than the Shamouti, have been seriously and consistently attacked.

Production costs

Lack of information and the pronounced variation in production and marketing methods used by Arabs and Jews make it difficult to obtain any reliable estimate of average production costs of oranges grown in Palestine as

a whole. In general, costs per acre in Jewish-owned orange groves are much higher than in Arab orchards and higher than average costs in California, Florida, or Spain.

While no study has ever been made on orange-production costs in the Arab-owned groves of Palestine, estimates have been made from time to time with regard to production and marketing in Jewish groves. In November 1936, one of the outstanding citriculturists of Palestine ^{6/} made an estimate of the total average cost of bringing an orange grove to what he termed a "self-supporting" age in that country. Assuming (1) the planting of budded trees, (2) the use of 100-percent Jewish (i.e., high-paid) labor, (3) the use of the income of the fifth and sixth years to pay for the cost of a packing shed, picking and packing equipment, rails and cars for hauling the fruit, and a wire-netting fence, he estimated the average cost per acre, including taxes and depreciation but excluding cost of land and interest on investment, to be as follows:

First year expenditures:

(1) Share in well and central water supply.....	\$100
(2) Irrigation system.....	60
(3) Other expenses.....	220
Total for first year.....	380
" " second "	140
" " third "	160
" " fourth "	180
" " fifth "	200
" " sixth "	200

Total cost of bringing an acre under citrus to
"self-supporting" age..... \$1,260

This expert added, however, that under ideal conditions the average cost could be reduced to about \$900 per acre, just as under difficult, but still better than marginal conditions, it might increase to about \$1,700 per acre. He concluded by saying, "Actually, I think that the real average for Palestine is much closer to this theoretical maximum (of about \$1,700 per acre) than to my suggested average of \$1,260." Among ways to reduce the average estimated costs, he cited (1) management of grove by owner; (2) use of Arab, i.e., low-paid, labor; (3) ideal soil and climatic conditions, particularly in southern Judea; (4) high water table; (5) absence of insects and pests; and (6) very close planting, which increases annual costs but not to the same extent as it hastens profitable bearing. Conditions tending to increase costs over the average estimate were cited as (1) planting of unbudded trees; (2) planting in sections of serious wind injury, particularly in northern Sharon; (3) planting of Shamouti oranges on sour stock, which decreases annual costs but not enough to offset their tardiness in bearing; and (4) failure to use machinery where Jewish labor is employed.

In 1937-38, it was customary for Jewish citrus growers in Palestine to estimate the cost of land suitable for orange production at from \$300 to \$400 an acre. On land owned and worked by Jews, the cost of bringing an acre planted in orange trees to a bearing (but not necessarily a self-supporting) age was estimated at about \$1,600, including cumulative interest but excluding the cost of land. Finally, the average annual cost of labor and upkeep (also in Jewish-owned groves) after the trees had reached bearing age was estimated at about

^{6/} Sachs, M. H., of Tel Aviv.

\$200 an acre. Even if actual conditions should be found to warrant some reduction in these estimates, they would still be much higher, item for item, than orange production costs in California or Florida. Greater yields per acre in Palestine, however, help somewhat to offset these high costs.

During the 1937-38 season, the cost of marketing oranges from the tree in Palestine to the importer's warehouse in the United Kingdom varied from a minimum of \$1.65 to a maximum of \$1.85 per box. In January 1938, the average total cost of production and marketing of oranges, exclusive of interest on investment, was estimated at \$2.45 per box. During the same month, the average wholesale price of Jaffa oranges on the London market varied from a low of \$2.06 to a high of \$3.34 per box. The large fruit sold at a loss, and medium- and small-sized oranges showed little or no profit. Many people in Palestine believe that present orange production costs could be reduced by 12 or 14 cents per box without affecting the quality or quantity of the fruit, but it is in the marketing field that cost reductions must be effected.

Table 14. Daily wages in orange groves of Palestine, March 1938 a/

Type of work	Men		Women		Children	
	Jewish	Arab	Jewish	Arab	Jewish	Arab
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Orange-picking season:						
Picking.....	0.75-1.00	0.50-0.75	0.75-1.00	<u>b/</u>	0.50-0.60	<u>b/</u>
Porterage -						
Baskets.....	0.75-1.12	0.25-0.30	<u>b/</u>	0.25-0.30	<u>b/</u>	0.15-0.30
Boxes.....	1.00-1.50	0.50-1.00	<u>b/</u>	<u>b/</u>	<u>b/</u>	<u>b/</u>
Sorting -						
1st class.....	<u>b/</u>	1.00-1.25	1.25-1.75	<u>b/</u>	<u>b/</u>	<u>b/</u>
2nd class.....	<u>b/</u>	0.60-1.00	1.00-1.25	<u>b/</u>	0.60-0.87	<u>b/</u>
Wrapping.....	<u>b/</u>	0.60-0.75	0.62-1.37	<u>b/</u>	0.60-1.00	<u>b/</u>
Packing -						
Chief packer...	2.00-6.00	1.50-3.00	<u>b/</u>	<u>b/</u>	<u>b/</u>	<u>b/</u>
Assistant.....	1.50-2.50	1.00-2.00	<u>b/</u>	<u>b/</u>	<u>b/</u>	<u>b/</u>
Tree planting and permanent workers						
in orange groves <u>c/</u>	1.00-1.50	0.50-0.60	<u>b/</u>	<u>b/</u>	<u>b/</u>	<u>b/</u>

Compiled from "Half-Yearly Wage Rates Statistics", Bulletin No. 5, 1938, Office of Statistics, Government of Palestine, Jerusalem, July 1938.

a/ Wages for Jewish labor are based on an 8-hour workday; wages for Arab labor are based on a day of 8 or 10 hours.

b/ Not generally employed for this type of work. See discussion on page 13.

c/ Average for the spring of 1938.

In general, labor costs in the production and packing of oranges in Jewish owned groves are much higher than in Arab orchards. The strength of Jewish organized labor, together with the efficiency and high standards of living among Jewish workers, helps them to obtain daily wages that in many instances are twice as high as those paid Arab laborers in Arab groves for a much longer workday. See table 14. These high labor costs are somewhat counterbalanced by the greater efficiency and better methods of cultivation used in Jewish groves, which usually result in higher yields per acre than in the Arab section of the

citrus industry. The tendency to pay high wages to Jewish workers, however, has benefited Arab laborers living in the neighborhood of large Jewish-owned groves. In the height of the picking and packing season, these groves employ a number of Arab laborers at higher wages than they can obtain in nearby Arab groves. This demand by Jews for Arab labor compels Arab orange producers, whose groves adjoin large Jewish-owned groves, to raise the wage level of their workers. Thus, the highest-paid workers in the Palestine orange groves are Jews; next highest, Arabs working in Jewish-owned groves; then, Arab laborers working in Arab groves located near large Jewish-owned groves; and lowest, Arabs who work in Arab orchards distant from Jewish groves.

As a result of the dense planting, which does not always permit the use of machinery in orange groves, more laborers are employed per acre in Palestine than in the United States. It is generally agreed that four full-time and eight seasonal workers per fruit-bearing acre are needed in orange groves in Palestine. About 40 percent of the labor required is permanent and 60 percent seasonal.

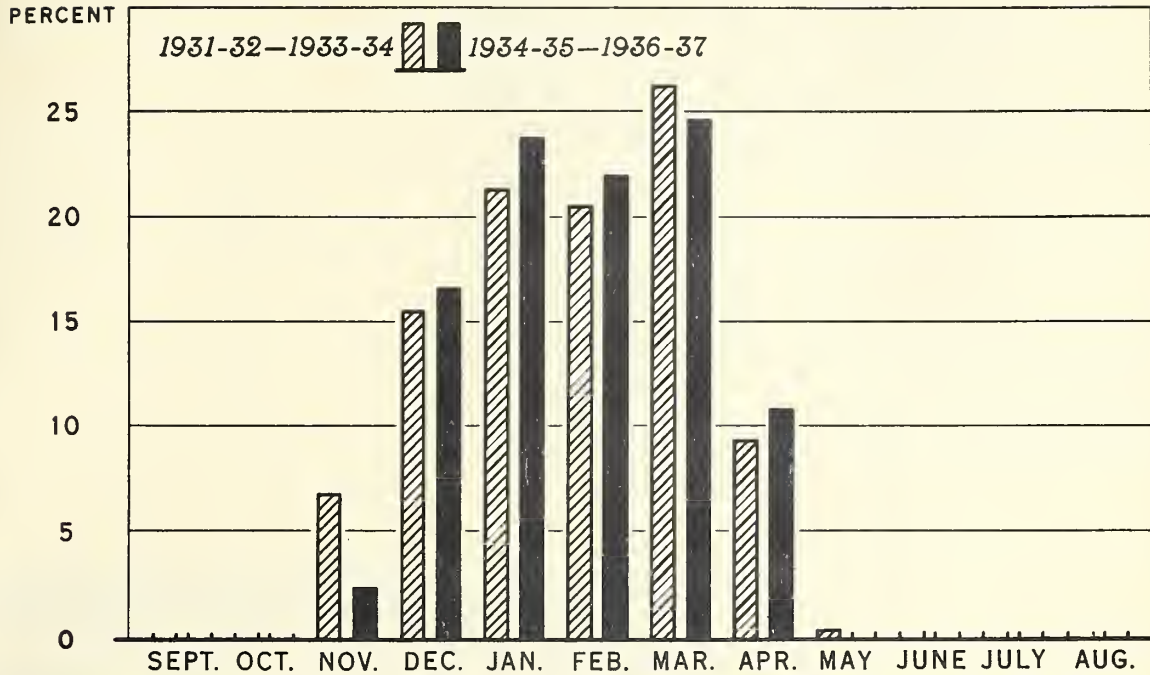
In general, Jews consider orange production a business enterprise and go about it very seriously, whereas a good percentage of the Arab groves are run as a secondary occupation, the merchant owners using them as a side line to their main business, without giving the groves the necessary attention. This situation, coupled with the lower cost of land and labor among Arab orange growers, makes it possible for the latter to make money from orange production even when Jewish growers are losing. This was particularly the case in the 1936-37 season and the early part of 1937-38, when very low prices meant heavy losses to small Jewish groves (especially those established in recent years on poor land), while Arab orange growers were still able to make a profit. This also explains why Arabs continued to plant citrus trees in 1936 and 1937.

Seasonal exports

Oranges are exported from Palestine from November through April, with the heaviest shipments taking place in the 4 months December-March. In the 7-year period 1931-32 to 1937-38, exports during those 4 months ranged from 77 to 92 percent of the total, with the rest shipped late in November or early in April. A noticeable change took place in the seasonal trend of marketing during those 7 years; early season shipments decreased and late-season exports increased. Thus, whereas in 1931-32, 10.4 percent of the year's shipments took place in November and only 3.7 in April, in 1936-37 November shipments had decreased to 1.8 percent of the total and April's had increased to 10.8 percent (see table 15). November and April shipments during the period 1931-32 to 1933-34 averaged 7.0 and 8.6 percent, respectively, of the yearly average, as compared with 3.3 and 9.3 percent during the 4-year period 1934-35 to 1937-38.

The decline in November orange shipments is a direct result of the Government's regulations fixing the third week of that month as the opening date of the orange export season. The increase in orange shipments during April, on the other hand, results both from these regulations and from the increase in the orange crop, all of which cannot now be exported from December through March. Since early and late-ripening orange varieties (particularly Valencias and Washington Navels) have been grafted on citrus trees to some extent in recent years, it is possible that in the future some oranges may be exported in October and in May, thus extending the Palestine export season to 8 months instead of the present 6.

**PALESTINE: MONTHLY EXPORTS OF ORANGES IN
PERCENTAGE OF YEARLY TOTAL, 3-YEAR AVERAGES
1931-32-1933-34 AND 1934-35-1936-37**



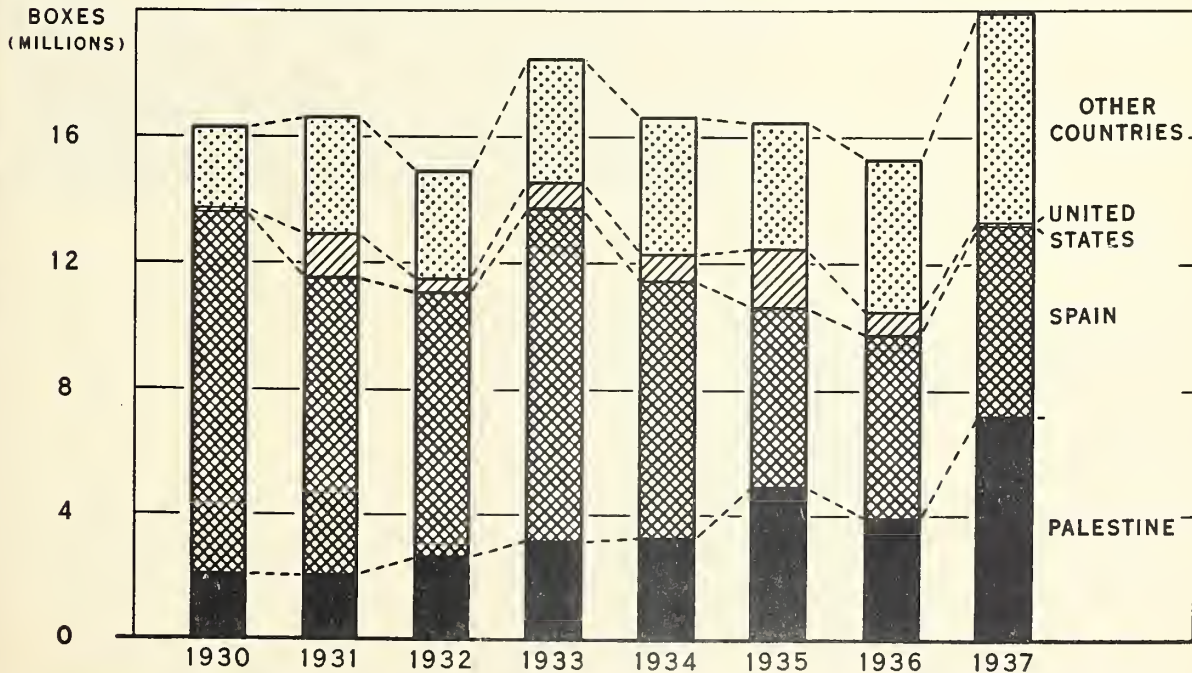
U. S. DEPARTMENT OF AGRICULTURE

Fig. 20.

NEG. 34367

BUREAU OF AGRICULTURAL ECONOMICS

**UNITED KINGDOM: IMPORTS OF ORANGES BY
SPECIFIED COUNTRIES OF ORIGIN, 1930-37**



U. S. DEPARTMENT OF AGRICULTURE

Fig. 21.

NEG. 34344

BUREAU OF AGRICULTURAL ECONOMICS



Fig. 22. Display of oranges from Palestine on the wharf in London.

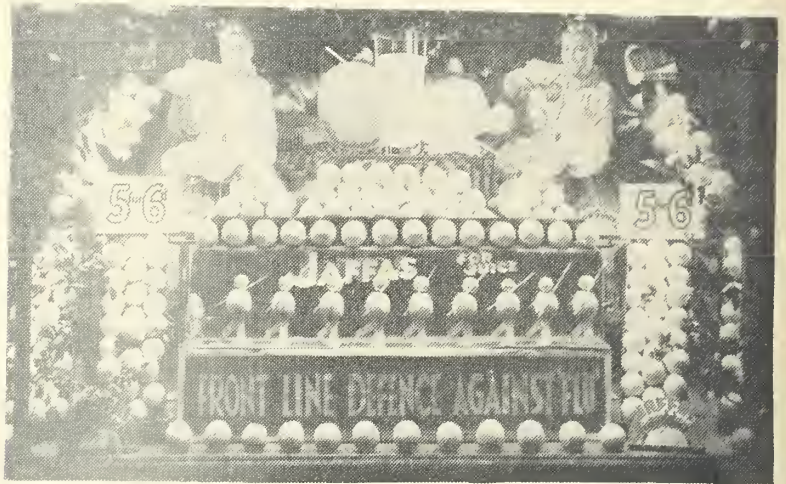


Fig. 23. Advertising Palestine oranges in the United Kingdom.

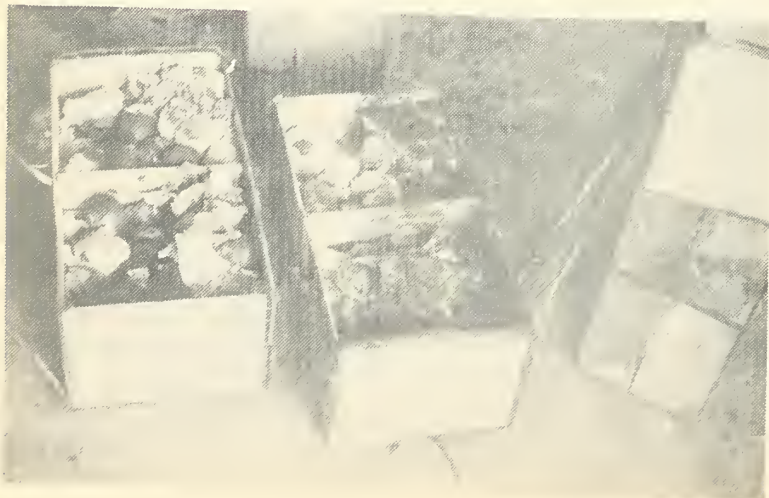


Fig. 24. Arrival of decayed Jaffa oranges on the London market

Table 15. Monthly exports of oranges from Palestine,
1931-32 to 1937-38.

Month	Quantity						
	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38
	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>
September...	0	0	0	0	0	0	0
October...	4	a/	0	0	0	0	0
November...	374	220	287	147	165	161	574
December...	637	734	637	749	985	1,712	2,264
January...	701	1,168	900	1,259	1,454	2,214	1,685
February...	751	910	999	1,503	1,231	1,857	2,115
March.....	986	922	1,494	1,853	1,006	2,248	2,282
April.....	132	274	806	1,107	151	994	639
May.....	a/	2	35	7	a/	5	14
June.....	0	0	0	0	0	a/	0
July.....	0	0	0	0	0	0	0
August.....	0	0	0	0	0	0	0
Total....	3,585	4,230	5,158	6,625	4,992	9,191	9,573
	Percentage each is of total						
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
September...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
October...	0.1	b/	0.0	0.0	0.0	0.0	0.0
November...	10.4	5.2	5.6	2.2	3.3	1.8	6.0
December...	17.8	17.4	12.3	11.3	19.7	18.6	23.7
January...	19.5	27.6	17.4	19.0	29.1	24.1	17.7
February...	21.0	21.5	19.4	22.7	24.7	20.2	22.0
March.....	27.5	21.8	29.0	28.0	20.2	24.5	23.8
April.....	3.7	6.5	15.6	16.7	3.0	10.8	6.6
May.....	b/	b/	0.7	0.1	b/	b/	0.2
June.....	0.0	0.0	0.0	0.0	0.0	b/	0.0
July.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total....	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Compiled from the "Palestine Commercial Bulletin."

a/ Less than 500.

b/ Less than one-tenth of 1 percent.

Distribution of exports by markets

From 1931-32 to 1937-38, three important developments took place in orange exports from Palestine by countries of destination: first, the increase of orange takings by citrus-importing countries of continental Europe, exclusive of Germany; second, the elimination of Germany as one of the largest importers of Palestine oranges; and, third, the great absolute increase in imports of Palestine oranges into the United Kingdom, accompanied by a slight decrease in that country's relative importance as an importer. See table 16. Thus, in 1931-32, the citrus-importing countries of continental Europe, exclusive of Germany, took only 10.6 percent of Palestine's orange exports, or about 380,000 boxes. In 1937-38, the same countries took about 35 percent of exports, or

3.3 million boxes. During the same 7 years, exports to Germany fell from 18 percent of the total, or 655,000 boxes, to 1.6 percent, or 159,000 boxes, although in 1933-34 that country took as many as 1,240,000 boxes of Jaffa oranges, or 24.4 percent of total exports. This loss of the German market was greatly felt by the Palestine orange growers during the 1936-37 and 1937-38 years of large crops and low prices.

Table 16. Orange exports from Palestine, by countries of destination, 1931-32 to 1937-38

Country of destination	Year ended May 31					
	1931-32		1932-33		1933-34	
	Quantity	Share	Quantity	Share	Quantity	Share
		of total		of total		of total
	1,000 boxes	Percent	1,000 boxes	Percent	1,000 boxes	Percent
United Kingdom and Ireland.....	2,563	70.6	3,061	72.5	3,180	62.4
Netherlands.....	50	1.4	78	1.9	138	2.7
Poland.....	16	0.4	10	0.3	27	0.5
Germany.....	655	18.0	733	17.4	1,239	24.4
Sweden.....	a/	-	40	0.9	59	1.1
Rumania.....	102	3.0	73	1.8	96	1.9
France.....	21	0.6	12	0.2	44	0.9
Norway.....	a/	-	29	0.7	64	1.3
Denmark.....	72	2.0	68	1.7	85	1.7
Belgium.....	a/	-	21	0.5	43	0.8
Czechoslovakia.....	9	0.3	4	b/	1	b/
Switzerland.....	a/	-	2	b/	c/	b/
Finland.....	a/	-	9	0.2	19	0.4
Latvia.....	10	0.3	4	b/	4	0.1
Soviet Union.....	a/	-	6	0.1	13	0.3
Bulgaria.....	8	0.2	9	0.3	8	0.2
Yugoslavia.....	7	0.1	4	0.1	3	b/
Austria.....	7	0.1	5	0.1	c/	b/
Hungary.....	a/	-	a/	-	a/	-
Others.....	80	2.2	1	b/	20	0.4
Total Europe.....	3,600	99.2	4,169	98.7	5,043	99.1
Canada.....	6	0.1	44	1.0	39	0.7
India and Far East.....	14	0.4	9	0.3	5	0.1
Egypt.....	5	0.1	1	b/	4	b/
Aden.....	a/	-	a/	-	4	0.1
Ceylon.....	a/	-	1	b/	c/	b/
Arabia.....	a/	-	a/	-	1	b/
Other countries.....	7	0.2	1	b/	1	b/
Total ex-Europe.....	32	0.8	56	1.3	54	0.9
Total all countries..	3,632	100.0	4,225	100.0	5,097	100.0

Continued *

Table 16. Orange exports from Palestine, by countries of destination,
1931-32 to 1937-38 - Continued

Country of destination	Year ended May 31							
	1934-35		1935-36		1936-37		1937-38 a/	
	Quan-	Share	Quan-	Share	Quan-	Share	Quan-	Share
	tity	of	tity	of	tity	of	tity	of
	1,000	total	1,000	total	1,000	total	1,000	total
	boxes	Percent	boxes	Percent	boxes	Percent	boxes	Percent
United Kingdom and Ireland...	4,586	70.5	3,359	67.2	6,610	72.0	6,015	63.0
Netherlands.....	358	5.5	311	6.2	549	6.0	1,025	10.7
Poland.....	153	2.4	255	5.2	279	3.0	356	3.8
Germany.....	493	7.8	207	4.1	245	2.8	159	1.6
Sweden.....	105	1.6	148	3.0	285	3.2	409	4.4
Rumania.....	148	2.3	115	2.3	178	1.9	181	2.0
France.....	141	2.1	77	1.5	191	2.1	91	1.0
Norway.....	99	1.5	98	2.0	142	1.5	248	2.6
Denmark.....	60	0.9	85	1.7	65	0.7	76	0.8
Belgium.....	111	1.7	63	1.3	193	2.2	356	3.8
Czechoslovakia...	58	1.0	71	1.4	147	1.6	237	2.4
Switzerland.....	35	0.5	36	0.7	23	0.2	22	0.2
Finland.....	35	0.5	42	0.8	71	0.8	103	1.0
Latvia.....	1	b/	23	0.4	28	0.3	37	0.4
Soviet Union....	22	0.3	25	0.5	27	0.3	a/	-
Bulgaria.....	7	0.1	20	0.4	35	0.4	45	0.4
Yugoslavia.....	27	0.4	19	0.4	48	0.5	43	0.4
Austria.....	11	0.2	14	0.3	26	0.3	23	0.2
Hungary.....	a/	-	4	0.1	4	b/	28	0.3
Other countries..	3	b/	3	0.1	15	0.2	47	0.5
Total Europe...	6,453	99.3	4,975	99.6	9,161	100.0	9,501	99.5
Canada.....	36	0.5	3	0.1	a/	-	44	0.4
India and Far East.....	6	0.1	5	0.1	a/	-	a/	-
Egypt.....	2	b/	4	0.1	a/	-	a/	-
Aden.....	5	0.1	5	0.1	a/	-	a/	-
Ceylon.....	3	b/	2	b/	a/	-	a/	-
Arabia.....	1	b/	2	b/	a/	-	a/	-
Other countries..	2	b/	1	b/	6	b/	15	0.1
Total ex-Europe....	55	0.7	22	0.4	6	100.0	59	0.5
Total all countries..	6,508	100.0	4,997	100.0	9,167	100.0	9,560	100.0

Compiled from "Weekly Fruit Intelligence Notes" and the annual "Fruit Supplies of the Imperial Economic Committee," London. The totals in this table differ slightly from those given in the "Palestine Commercial Bulletin." They were used, however, because that publication does not show exports by countries of destination on a marketing-year basis.

a/ If any, included in others.

b/ Less than one-tenth of 1 percent.

c/ Less than 500 boxes.

While Germany decreased imports of Palestine oranges, the United Kingdom increased them from 2.5 million boxes in 1931-32 to 6 million in 1937-38, a gain of 140 percent. Despite this tremendous expansion of imports, in 1937-38 the United Kingdom takings of Palestine oranges represented only 63 percent of the latter's orange exports compared with 70.6 percent in 1931-32 and the average for the 6 years, 1932-33 through 1937-38 of 68 percent.

The British market

History and development: The pioneer in the exportation of Palestine oranges to the United Kingdom is said to have been a Greek merchant who resided in Jaffa about 65 years ago. As he wanted to keep his trade a secret, he sent his oranges first to Smyrna, where they were transhipped to the United Kingdom. When orange exports from Palestine began to grow in importance, it was found that their principal market had already been established in the United Kingdom. It has been reported that from 1895 to 1900 an average of about 70 percent of the annual orange exports from Palestine went to the United Kingdom. From 1900 to the outbreak of the World War, that country's share was still larger.

From the end of the World War to 1926-27, almost the entire orange crop of Palestine was exported to the United Kingdom, where the bulk of it was consumed and the remainder reexported to other countries. About 94 percent of the oranges exported from Palestine in 1926-27 went to the United Kingdom. As orange production increased, however, Palestine exporters began to look for other markets. This has resulted in a gradual decline in the predominance of that country as an importer of Palestine oranges. During the 6-year period 1932-33 to 1937-38, the United Kingdom took an average of only 68 percent of all Palestine orange exports, while the rest were diverted to other markets. Yet, despite the increase in imports of Palestine oranges into other countries, the United Kingdom still remains the largest single importer, buying on the average more than twice as many as all other countries combined. Though Palestine is a British Mandate, Palestinian oranges do not benefit from any Empire preference but pay the same duty as do oranges from non-Empire countries. 7/ The development of the British market for Palestine oranges during the last decade can be appraised better when it is remembered that in 1937-38 the United Kingdom imported 6,015,000 boxes compared with 1,900,000 boxes in 1926-27. Many people in Palestine believe that the continued preeminence of the United Kingdom as a buyer of Jaffa oranges is due to excessive trade restrictions hampering the free development of other markets during the past 5 years.

Important changes have taken place in the distribution of orange exports from Palestine among the various markets of the United Kingdom. The first direct shipments were discharged mainly at Liverpool; and, until about 7 years ago, that port was still the principal market in England. Next in order of importance came Glasgow, Manchester, and Hull. Palestine exporters then considered London the stronghold of Spanish shippers, with whom they did not believe they could successfully compete. Larger orange crops, however, forced them to broaden the distribution of their exports to the United Kingdom, and since 1931 exports to the London market have increased each year. In

7/ At present, the seasonal duty on oranges imported into the United Kingdom is as follows: December 1 to March 31, 10 percent ad valorem; April 1 to November 30, 3s.6d. per hundredweight, or about 54 cents per box of 70 pounds net.

1937-38, about one-third of the shipments went to London and another third to Liverpool. The development of the London market has not obscured the importance of Liverpool, which continues to receive one-third of the oranges imported from Palestine. The Manchester market, however, now receives only about 4 percent compared with 16 percent some 10 years ago.

It is estimated that Jewish exporters affiliated with the Jaffa Citrus Exchange, at present controlling over 60 percent of the orange exports from Palestine, sell only 55 or 60 percent of their fruit to the United Kingdom, shipping between 40 and 45 percent to other countries. Arab shippers, on the other hand, export about 80 percent of the Arab-grown fruit to the United Kingdom and only 20 percent to other countries.

Competition of oranges from other countries: Before discussing the competition that Jaffa oranges meet in the United Kingdom from oranges of other countries; some mention may be made of the competition from other fruits. During the 7-year period 1929-1935, when the average per-capita consumption of all fruits in the United Kingdom was 84.2 pounds, apples accounted for an average of 26 pounds, oranges for 23.8 pounds, and bananas for 11.8 pounds. From this it may be inferred that the increase in total orange consumption in the United Kingdom depends on the general expansion of fruit consumption as well as the ability of oranges to compete with apples and bananas. In this connection, it is of interest to note that from 1933 to 1936, when British apple and banana per-capita consumption increased from 24.6 to 29.3 pounds and 11.4 to 14.5 pounds, respectively, the per-capita consumption of oranges decreased from 27 to 22.7 pounds (see table 26).

Despite this decline, the United Kingdom consumes more oranges per capita than any other country, with the exception of the United States. Once during the past 12 years (1929) per-capita consumption of oranges in the United Kingdom was higher than in the United States, while on two occasions (1927 and 1933) it was almost the same.

Practically all the oranges from Palestine reach the United Kingdom during the 5-month period December to April, with the heaviest arrivals taking place from December 1 to March 31, the period of reduced import duty. These months also constitute the peak period for orange imports from Spain, the only other large supplier of oranges at this season. This means that Spanish oranges come into direct competition with the Palestinian product throughout the whole of its season (see table 17).

So far, Jaffa oranges have not competed directly with American oranges in the British market, since the latter arrive mainly during the 6-month period May to October. If Palestine in the future ships more Valencia oranges, they will still be found on the British market in May and June. They will then compete with the early arrivals of American oranges, which at present generally bring good prices during those 2 months. Early and late arrivals of Brazilian and South African oranges offer some competition to oranges from Palestine in the United Kingdom market. A few years ago, before the increase of Brazilian orange exports to the United Kingdom, Jaffa oranges arriving early in December brought good prices, especially during the holiday season. At present, however, December arrivals in the British market meet keen competition from the Brazilian product, which is cheaper and riper during that month. Any future increase in Palestine exports of Valencia oranges, on the other hand, may play the same trick on early arrivals of the Brazilian product in May and June.

Table 17. Monthly imports of oranges into the United Kingdom
by countries of origin, 1936 and 1937

Year and month	South Africa	Palestine	Spain	United States	Brazil	Other countries	Total
	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>	<u>boxes</u>
1936							
Jan.....	-	1,050	997	2	-	41	2,090
Feb.....	-	771	888	3	-	23	1,685
Mar.....	-	793	1,450	16	-	53	2,312
Apr.....	-	162	429	91	37	38	757
May.....	3	8	731	224	377	13	1,361
June.....	106	-	425	250	376	8	1,165
July.....	534	-	18	86	160	18	816
Aug.....	434	-	-	1	181	32	648
Sept.....	320	-	1	15	294	53	683
Oct.....	544	-	-	-	317	81	942
Nov.....	224	-	40	-	224	112	600
Dec.....	11	1,122	787	27	109	136	2,192
Total..	2,176	3,906	5,766	715	2,075	613	15,251
1937							
Jan.....	-	1,515	1,638	11	-	139	3,303
Feb.....	-	1,426	1,138	-	-	66	2,630
Mar.....	-	1,798	1,046	-	-	13	2,857
Apr.....	-	805	729	2	30	11	1,577
May.....	5	82	646	3	330	19	1,085
June.....	288	-	347	3	496	38	1,172
July.....	907	-	24	2	430	22	1,385
Aug.....	517	-	2	-	334	34	887
Sept.....	448	-	-	14	291	77	830
Oct.....	771	-	-	-	340	70	1,181
Nov.....	392	-	5	-	272	113	782
Dec.....	21	1,404	454	8	189	134	2,300
Total..	3,349	7,120	6,029	43	2,712	736	19,989

Compiled from Fruit Supplies, a supplement to Weekly Fruit Intelligence Notes, Imperial Economic Committee, London, 1936 and 1937. Converted from hundredweight of 112 pounds to boxes of 70 pounds net.

In 1930, the United Kingdom imported a total of 16.3 million boxes of oranges, of which Palestine supplied 2.1 million or 13 percent, compared with 11.5 million boxes or 70.6 percent supplied by Spain. In 1937, total orange imports into the United Kingdom had increased to 20 million boxes, of which Palestine supplied 7.1 million boxes or 35.6 percent, compared with only 6 million boxes or 30 percent shipped by Spain. In other words, from 1930 to 1937, imports of Palestine oranges into the United Kingdom showed a gain of 240 percent as against a loss of 48 percent incurred by their principal competitor, the Spanish product. While the civil war in Spain may have been responsible for the light exports of Spanish oranges to the United Kingdom in 1936 and 1937, the declining trend began in 1931 (see table 18). The increase in the sale of Palestine oranges in the British market and their successful competition with Spanish oranges may be attributed largely to their superiority in quality.

Table 18. Imports of oranges into the United Kingdom by countries of origin, 1930 - 1937

Country of origin	1930		1931		1932		1933	
	Quantity	Percentage of total	Quantity	Percentage of total	Quantity	Percentage of total	Quantity	Percentage of total
	boxes	Percent	boxes	Percent	boxes	Percent	boxes	Percent
Empire countries	1,000		1,900		1,000		1,000	
Australia	a/	b/	10	0.06	2	0.01	74	0.40
British West Indies	2	0.01	2	.01	2	.01	3	.02
Cyprus	1	.01	5	.03	6	.04	43	.23
Palestine c/	2,117	12.96	2,062	12.40	2,619	17.52	3,109	16.81
South Africa and								
Southern Rhodesia	1,760	10.78	1,550	9.33	1,731	11.58	1,878	10.16
Others	3	.02	2	.01	2	.02	0	.00
Total Empire countries	3,883	23.78	3,631	21.84	4,362	29.18	5,107	27.62
Non-Empire countries								
Brazil	562	3.44	1,790	10.77	1,555	10.40	1,768	9.56
Egypt	35	.52	35	.21	8	.05	13	.07
Italy	70	.43	85	.50	59	.40	51	.28
Portuguese East								
Africa	17	.11	54	.33	35	.23	16	.09
Spain	11,530	70.60	9,474	56.98	8,395	56.16	10,586	57.26
United States	61	.37	1,354	8.14	469	3.14	866	4.68
Others	123	.75	205	1.23	66	.44	81	.44
Total non-Empire countries	12,448	76.22	12,995	78.16	10,537	70.82	13,381	72.38
Total all countries	16,331	100.00	16,626	100.00	14,949	100.00	18,488	100.00

Continued -

Table 18. Imports of oranges into the United Kingdom by countries of origin, 1930 - 1937 - Continued

Country of origin	1934			1935			1936			1937 d/		
	Quantity : boxes	Percentage : of total	Quantity : boxes	Percentage : of total	Quantity : boxes	Percentage : of total	Quantity : boxes	Percentage : of total	Quantity : boxes	Percentage : of total	Quantity : boxes	Percentage : of total
Empire countries	1,000		1,000		1,000		1,000		1,000		1,000	
Australia	181	1.09	77	0.47	62	0.41	35	0.18	35	0.18	35	0.18
British West Indies	2	.01	6	.04	170	1.12	110	.55	110	.55	110	.55
Cyprus	101	.61	75	.45	185	1.21	216	1.08	216	1.08	216	1.08
Palestine c/	3,267	19.62	4,901	29.73	3,906	25.61	7,120	35.62	7,120	35.62	7,120	35.62
South Africa and												
Southern Rhodesia	2,062	12.39	2,032	12.32	2,219	14.55	3,495	17.48	3,495	17.48	3,495	17.48
Others	1	.01	5	.03	5	.03	2	.01	2	.01	2	.01
Total Empire	5,614	33.73	7,096	43.04	6,547	42.93	10,978	54.92	10,978	54.92	10,978	54.92
Non-Empire countries												
Brazil	1,952	11.73	1,730	10.49	2,075	13.61	2,712	13.57	2,712	13.57	2,712	13.57
Egypt	46	.27	37	.22	42	.27	27	.13	27	.13	27	.13
Italy	78	.47	42	.25	2	.01	77	.39	77	.39	77	.39
Portuguese East												
Africa	10	.06	6	.04	3	.02	19	.10	19	.10	19	.10
Spain	8,110	48.72	5,667	34.37	5,766	37.81	6,029	30.16	6,029	30.16	6,029	30.16
United States	802	4.82	1,835	11.13	715	4.69	43	.21	43	.21	43	.21
Others	34	.20	75	.46	101	.66	104	.52	104	.52	104	.52
Total non-Empire	11,032	66.27	9,392	56.96	8,704	57.07	9,011	45.08	9,011	45.08	9,011	45.08
Total all	16,646	100.00	16,488	100.00	15,251	100.00	19,989	100.00	19,989	100.00	19,989	100.00

Compiled from Fruit Supplies, a supplement to Weekly Fruit Intelligence Notes, Imperial Economic Committee, London, 1936 and 1937. Converted from hundredweight of 112 pounds to boxes of 70 pounds net.
 a/ Less than 500 boxes. b/ Less than one-hundredth of 1 percent. c/ British Mandated Territory.
 Preliminary.

While in recent years the rapid rate of increase in the sale of Palestine oranges in the British market clearly shows a growing preference for this fruit compared with Spanish oranges, the extent of displacement in the future will be somewhat limited, since the United Kingdom still has a certain need for the cheap Spanish product. By and large, the increase in British purchases of Palestine oranges will not depend so much on the displacement of oranges from other countries or of other kinds of fruit as on an expansion of British fruit requirements in general.

Other markets

Germany: Some years ago, the German market for oranges was supplied almost exclusively by the Spanish, and to a smaller extent, the Italian product. In 1928, Palestine filled only about 2 percent of the German orange requirements and Spain accounted for 86 percent. It was quite difficult for Palestine exporters to penetrate this market, as German consumers were accustomed to inexpensive Spanish oranges. When they became convinced of the superior quality of the Jaffa orange, however, the German market developed rapidly. Within 5 or 6 years, Germany became the second largest single consumer of Palestine oranges and the largest in continental Europe (see table 16). The Jaffa orange was so popular in Germany that imports from Palestine continued to increase even after total orange imports into Germany had begun to decline as a result of trade restrictions. From 1930 to 1934, Germany took, on an average, 65 percent of all Palestine oranges sold in continental Europe, although its total imports of oranges decreased by about 25 percent during that 5-year period. In 1934, Germany imported a total of 8,355,000 boxes, of which 17.3 percent, or 1,448,000 boxes, were from Palestine (see table 19).

After 1934, the German market for Jaffa oranges began to shrink gradually, despite the efforts of Palestine exporters to maintain it through barter transactions. In 1937, imports of Palestine oranges into Germany totaled only 211,000 boxes, representing 7.1 percent of the total. During that year, as a result of quota readjustments, Italy supplied 51 percent of German orange requirements while Spain accounted for only 20 percent. It is believed in Palestine that the German market cannot be regained for the present.

Table 19. Total German imports of oranges and imports from Palestine, 1928-1937 and January-June 1938

Year	Total	From Palestine	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1928.....	8,179	143	1.7
1929.....	7,511	200	2.7
1930.....	11,083	410	3.7
1931.....	8,748	450	5.1
1932.....	4,741	599	12.6
1933.....	8,506	712	8.4
1934.....	8,355	1,448	17.3
1935.....	7,545	507	6.7
1936.....	8,417	212	2.5
1937.....	2,983	211	7.1
January-June 1938.....	1,790	159	9.0

Compiled from Der Auswärtige Handel Deutschlands, Heft I, and Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

The Netherlands: The loss of the German market for Palestine oranges seems to have been somewhat offset by the development of the Netherlands as an outlet for this fruit. In fact, the rapid increase of exports to that country constitutes one of the outstanding features of the trade during the last decade. In 1927, total orange imports into the Netherlands amounted to 1,715,000 boxes, of which Palestine supplied less than 1 percent, or 16,000 boxes. Ten years later, orange imports into that country totaled 2,296,000 boxes, of which 29 percent, or 665,000 boxes, were of Jaffa oranges (see table 20). From 1935 to date, the Netherlands has been the second largest consumer of Palestine oranges and the largest single consumer in continental Europe. The importance of this market as an outlet for the Palestine product, however, is greater than the figures indicate because it consumes considerable quantities of large-sized fruit that cannot be sold easily in other markets.

Table 20. Total Netherland imports of oranges and imports from Palestine, 1926-1937 and January-June 1938

Year	Total	From Palestine and Cyprus	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1926.....	1,796	a/	-
1927.....	1,715	16	0.9
1928.....	2,063	27	1.3
1929.....	2,130	46	2.2
1930.....	2,717	18	0.7
1931.....	2,439	12	0.5
1932.....	2,331	50	2.1
1933.....	2,437	79	3.2
1934.....	1,639	132	8.1
1935.....	1,935	408	21.1
1936.....	2,368	368	15.5
1937.....	2,296	665	29.0
January-June 1938.....	1,624	1,072	66.0

Compiled from Jaarstatistiek van den in, uit-en Doorvoer, Deel I.

a/ Less than 500.

Normally, only Spanish and Palestine oranges are found on the Netherland market during the winter season. Spain supplies a large part of requirements, largely made up of small fruit, while the large-sized oranges are imported from Palestine. In other words, as consumption has increased only slightly since 1931, the great increase in imports from Palestine has been entirely at the expense of the Spanish product. The displacement process has been accelerated since 1934.

From January 1 to June 30, 1938, the Netherlands imported 1,072,000 boxes of both small- and large-sized oranges from Palestine, while almost no Spanish fruit was shipped to that market. This, however, was due mainly to difficulties between the Netherlands and Spain over clearing agreements and should not be taken to represent normal conditions. With the signing, at the close of the 1937-38 season, of a new Netherland-Spanish clearing agreement, Spain will resume orange shipments. The future of Palestine oranges in the Netherlands will therefore continue to depend on the quantity and quality of Spanish oranges shipped to that market.

The Netherlands is one of the few prosperous countries of continental Europe, and the standard of living is relatively high. Its total orange per-capita consumption is highest of all continental European countries and is very close to that of the United Kingdom. Moreover, since there are no import restrictions on oranges, other than a relatively small duty, it is not unlikely that this market may become a more important outlet for the Jaffa orange, especially if the latter continues to compete effectively with the Spanish product.

A recent development has taken place, however, which in the long run may affect Palestine orange exports to the Netherlands. With a view to reducing imports of foreign-produced citrus fruit, the Government of the Netherlands has recently decided to begin large-scale citrus planting in its colony of Surinam. This was decided upon after experts had investigated conditions and agreed that both the soil and the climate of this colony are favorable for large-scale citrus growing. Orange production in Surinam supplied only domestic consumption until 1937, when exports amounting to about 30,000 boxes were made. The fact that the orange-growing season in this Netherland possession coincides with that of Palestine means that larger exports in the future may compete directly with the Jaffa orange on the Netherland market.

Poland: Except in the citrus-producing countries of Europe, oranges are still considered a luxury product in European countries with low average incomes. Moreover, import restrictions and especially high duties definitely effect orange exports to those countries. This can be illustrated by Poland. In 1924, with a relatively low duty on citrus fruit, that country imported a total of 700,000 boxes of oranges, and indications pointed to a gradual development of the market. With the adoption of a high duty and other import restrictions, however, imports gradually declined and amounted to only 79,000 boxes in 1933. A lowering of the duty in 1935 resulted in a tremendous increase in imports - to 1,062,000 boxes compared with 87,000 boxes in 1934. Through the tightening and loosening of import restrictions, it was thus possible to reduce per-capita orange consumption in Poland from about 1.7 pounds in 1925 to 0.17 pound in 1933 and to raise it again to 2.1 pounds in 1935.

Table 21. Total Poland and Dantzig imports of oranges and imports
1928-1937 and January-June 1938

Year	Total	From Palestine	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1928.....	150	a/	-
1929.....	137	a/	-
1930.....	163	a/	-
1931.....	136	a/	-
1932.....	93	11	11.8
1933.....	79	13	16.5
1934.....	87	13	14.9
1935.....	1,062	189	17.8
1936.....	814	283	35.4
1937.....	828	299	36.1
January-June 1938..	616	380	62.0

Compiled from Annuaire du Commerce Extérieur de la République Polonaise et de la Ville Libre de Dantzig.

a/ If any, included in other countries.

Imports of Palestine oranges into Poland during the past few years have followed about the same course as total imports of oranges into that country. From 11,000 boxes in 1932 they rose to 380,000 in the January-June 1938 period, representing 62 percent of Poland's total orange imports during those 6 months (see table 21). Early orange shipments from Palestine to Poland went through Trieste, and oranges shipped from Haifa reached the Polish market within 7 days. In recent years, however, as a result of the excessive import duty placed on oranges that do not enter the country through Polish ports, Palestine exporters have been forced to ship their fruit by boat directly to Gdynia. Palestine oranges now reach Polish consumers 3 weeks after they have been loaded at Haifa. This lengthy period in transit tends to lower the quality of the fruit, since it is generally shipped under ordinary stowage conditions.

The future of the Polish market for Palestine oranges depends entirely on the amount of import restrictions placed upon them.

The Scandinavian countries: The combined imports of Palestine oranges into the three Scandinavian countries have increased from 92,000 boxes in 1932 to 529,000 in 1937. Imports into Norway showed by far the greatest rate of increase during that period, although of the three countries the largest importer of Palestine oranges in 1937 was Sweden. Denmark, which a few years ago seemed likely to become an important consumer of Jaffa oranges, has proved a disappointment to Palestine exporters.

Another good illustration of the effect of import-restriction measures on orange consumption may be obtained from a comparison of imports into Sweden, Norway, and Denmark during the last decade. This comparison is all the more valuable because of the similar economic conditions in the three countries. Only Denmark has placed restrictions on orange imports. In 1929, the per-capita consumption of oranges in Sweden and Denmark was low but quite similar, 5.6 and 5.3 pounds, respectively. Since that year, however, orange consumption in Sweden has increased steadily, whereas it has declined steadily since 1930 in Denmark, especially after the application of import restrictions. This variation in the trend of consumption in the two countries has been due solely to the effect of Danish import restrictions, since there has been no change in the general economic position of the two countries.

Table 22. Total Swedish imports of oranges and imports from Palestine, 1928-1937 and January-June 1938

Year	Total	From Palestine	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1928.....	444	a/	-
1929.....	490	1	0.2
1930.....	382	b/	-
1931.....	889	14	1.6
1932.....	837	34	4.1
1933.....	1,055	29	2.7
1934.....	1,097	48	4.4
1935.....	1,102	97	8.8
1936.....	1,105	192	17.4
1937.....	1,206	303	25.1
January-June 1938...	892	c/	-

Compiled from Sveriges Officiella Statistik Handel Berattelse.

a/ Not separately classified. b/ Less than 500. c/ Not yet available.

The growing popularity of oranges in Sweden is indicated by the fact that from 1929 to 1935 orange consumption in that country increased by 120 per cent, although total fruit imports during the period increased by only 10 per cent. In 1929, Sweden took 490,000 boxes of oranges, of which Palestine supplied two-tenths of 1 percent, or 1,000 boxes. In 1937, this market consumed 1,206,000 boxes of oranges, of which 25 percent, or 303,000 boxes were Jaffa oranges (see table 22). This tremendous rate of increase in imports of Jaffa oranges compared with the rate of increase in total orange imports during the two periods clearly indicates that the Palestine product is gaining ground at the expense of other oranges. It is believed that this trend will continue if the Swedish market remains free, because the high wage level of the Swedish worker does not restrict orange consumption to the less expensive Spanish fruit.

In Norway, also, the consumption of oranges from Palestine has increased in the past few years, although not so rapidly as in Sweden. In 1932, Norwegian imports of oranges totaled 621,000 boxes, of which 3.1 percent, or 19,000 boxes came from Palestine. In 1937, total imports had increased to only 693,000 boxes and those from Palestine to 180,000 boxes, representing 26 percent of the total (see table 23). Total orange imports during that 6-year period increased by only 11.6 percent, but imports from Palestine increased ninefold. Most of that gain was therefore at the expense of oranges from other countries, especially Spain. The steadily increasing imports from Palestine indicate that the same trend may be continued provided Norway does not raise its present relatively low duty.

Table 23. Total Norwegian imports of oranges and imports from Palestine, 1928-1937 and January-June 1938 a/

Year	Total	From Palestine	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1928.....	474	b/	-
1929.....	483	b/	-
1930.....	612	b/	-
1931.....	560	b/	-
1932.....	621	19	3.1
1933.....	669	23	3.4
1934.....	696	50	7.2
1935.....	654	102	15.6
1936.....	677	119	17.6
1937.....	693	180	26.0
January-June 1938...	563	c/	-

Compiled from Norges Handel.

a/ From 1928 to 1933 lemons are included; beginning with 1934, grapefruit are included. b/ Not separately classified. c/ Not yet available.

Besides a somewhat high duty on oranges, Denmark restricts imports through the application of a quota system. Despite these restrictions, Palestine oranges are increasing in popularity on the Danish market. During the 5-year period 1928-1932, annual imports of oranges averaged 315,000 boxes, of which Palestine supplied about 5.1 percent, or 16,000 boxes. In the following 5-year period 1933-1937, on the other hand, the yearly average showed little change (302,000 boxes), with Jaffa oranges accounting for 16.5 percent, or 50,000 boxes (see table 24). The fact that Palestine oranges showed a gain of 213 percent as

against a decrease of 4 percent in total orange imports clearly indicates that they are displacing oranges from other countries on the Danish market. This displacement is not the result of free competition in the ordinary sense of the word, since supplies are regulated, but has occurred because the Danish Government has granted a steadily increasing quota for Palestine oranges.

Table 24. Total Danish imports of oranges and imports from Palestine, 1926-1937 and January-June 1938 a/

Year	Total	From Southwest Asia b/	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1926.....	282	-	-
1927.....	268	5	1.9
1928.....	285	5	1.8
1929.....	283	6	2.1
1930.....	344	10	2.9
1931.....	332	22	6.6
1932.....	332	39	11.7
1933.....	330	44	13.3
1934.....	346	50	14.5
1935.....	288	43	14.9
1936.....	283	66	23.3
1937.....	264	46	17.4
January-June 1938..	176	c/	-

Compiled from Danmarks Vareindførsel og Udførsel.

a/ From 1926 to 1933 oranges, mandarins, and grapefruit are included; beginning with 1934, grapefruit are excluded.

b/ Assumed to be mainly from Palestine.

c/ Not yet available.

Canada: Of the less important markets, Canada deserves some attention in view of its position as an outlet for American citrus exports. As far back as 1932, the Jaffa Citrus Exchange asked the Canadian Government to extend to Palestine oranges the benefits of Imperial Preference, but this was not granted until 1937. Palestine oranges were then placed on the list of goods imported into Canada practically free of duty. In 1932-33, exports of Jaffa oranges to Canada exceeded 44,000 boxes and represented 1 percent of Palestine's total orange shipments. In 1935-36, these exports had decreased to 3,400 boxes, representing only one-tenth of 1 percent of all shipments and were even less in 1936-37 (see table 16). As a result of the new treatment granted in 1937 by the Canadian Government, however, exports of Jaffa oranges to Canada increased to 44,000 boxes during 1937-38.

This increase was due to the inauguration by Jewish shippers of a service of refrigerated boats to Canada and the placing of their sales in the hands of one firm. For the first time, Palestine oranges arrived on the Canadian market in excellent condition and left a good impression with consumers. The lack of a standard-sized box and the excessive number of brands were the main points raised against the Jaffa fruit. The Canadian fruit trade believes that if the refrigerated boat service is continued Canada may become a very profitable market for Palestine oranges in the near future. It is not unlikely, therefore, that under the stimulus of Canada's new treatment exporters of Jaffa oranges, who are eagerly seeking new markets for their increasing supplies, may attempt in the future to develop this promising market.

Table 25. Total Canadian imports of oranges and imports from Palestine, 1928-1937

Year	Total	From Palestine	
		Quantity	Percentage of total
	1,000 boxes	1,000 boxes	Percent
1928.....	2,212	a/	-
1929.....	3,128	a/	-
1930.....	b/	b/	b/
1931.....	b/	b/	b/
1932.....	2,171	5	0.2
1933.....	2,048	39	1.9
1934.....	2,162	48	2.2
1935.....	2,385	43	1.8
1936.....	2,573	3	0.1
1937.....	2,511	3	0.1

Compiled from Trade of Canada.

a/ Not separately classified. b/ Reported in value only.

Factors Affecting future marketing

The principal obstacles to the marketing of Palestine oranges in European countries may be briefly summarized as follows:

(1) In many countries, orange imports are limited by quotas granted on the strength of reciprocal trade agreements entered into with citrus-producing countries. As a result of the "open door" policy, Palestine cannot conclude such bilateral agreements and is thus at a disadvantage.

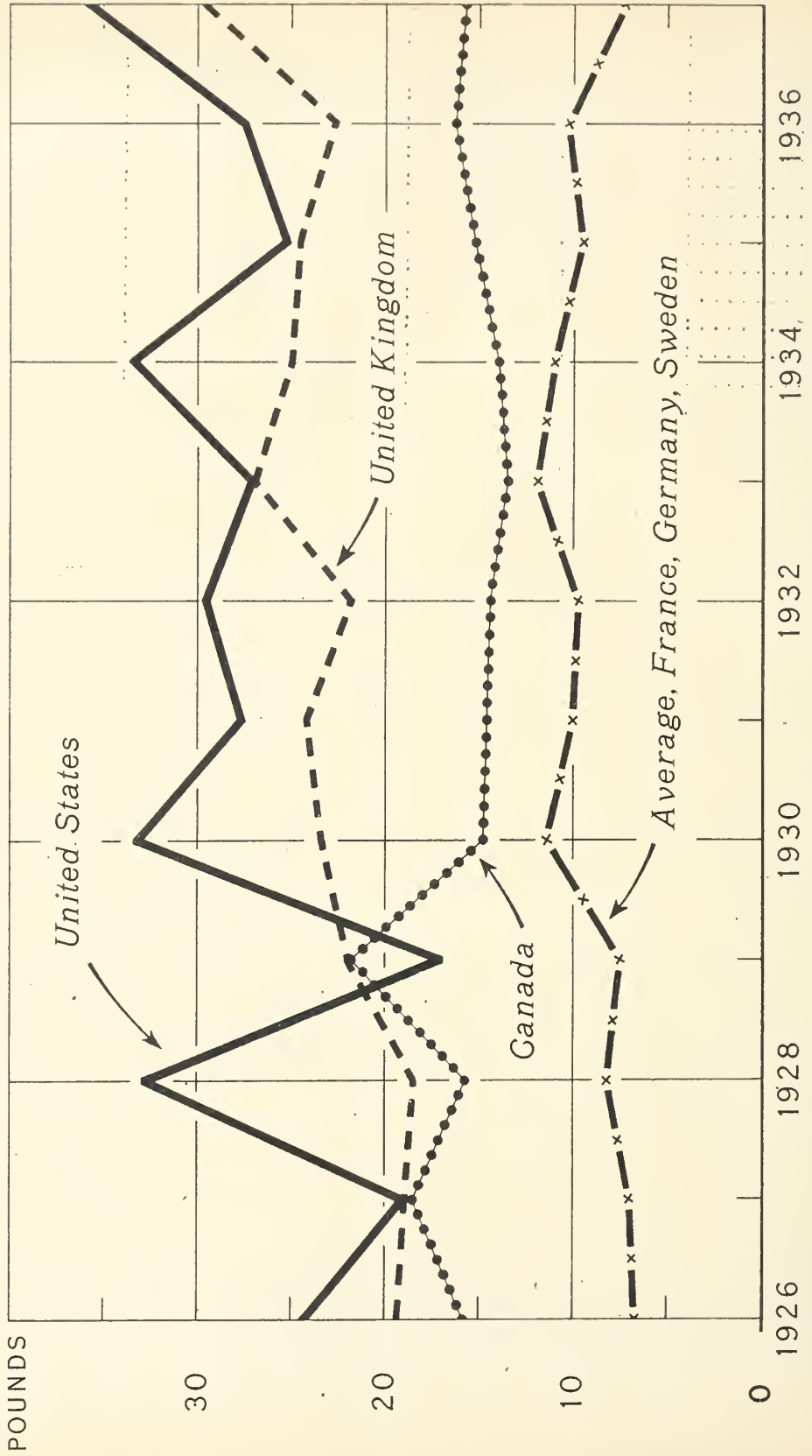
(2) In citrus-importing countries where there is control of currency and exchange, bilateral clearing agreements with Spain and Italy enable orange exporters of those two countries to obtain payment for their fruit. Again, because of the "open door" policy, Palestine is prevented from entering into such agreements.

(3) In many countries oranges are still considered a luxury product, and import duties range from 100 to 1,000 percent of the value. In this connection, Palestine oranges pay a 15- to 18-percent higher tariff duty than the Spanish or Italian product in countries where the duty is calculated on the gross weight, since Jaffa oranges are shipped in boxes, while oranges from Spain or Italy can be sent in bulk by rail.

(4) Italian and Spanish oranges are smaller than the Palestine product; individual oranges therefore cost less to the consumer, which is a real advantage, especially in countries of low purchasing power.

In 1936-37 and 1937-38, when orange exports from Palestine reached the high marks of 9.2 and 9.5 million boxes, respectively, prices were the lowest in the history of the industry, and many growers incurred heavy losses. Faced with further expansion of crops, which in 1942-43 may result in an exportable surplus of about 20 million boxes of oranges, leaders of the industry are attempting to find a solution to their marketing problems. It is generally believed in Palestine that the profitable marketing of Jaffa oranges in the future will depend to a great extent on three principal factors: First, reduction in marketing costs; second, lengthening of the export season; and, third, development of trade agreements with orange-importing countries.

ORANGES: ESTIMATED PER CAPITA DISAPPEARANCE IN SPECIFIED COUNTRIES, 1926-37



DATA FOR 1937 ARE PRELIMINARY

In recent years, especially after the heavy crop and low prices of 1936-37, it has been proposed that a union be formed of all Palestine citrus-marketing cooperative organizations (which market, on an average, about 50 percent of the citrus crop) in order to effect savings in marketing costs. Early in the 1937-38 season, there was much talk in Palestine about the Ichud (Hebrew for "union"), or union of cooperatives. The managers of all the citrus cooperatives met on various occasions and discussed the possibility of founding an organization modeled after the California Fruit Growers Exchange. Briefly, the object of the Ichud was to be the marketing of Palestine citrus fruit in such a way as to assure a fair return to the grower. Its functions were to be the promotion of better and more uniform farm-management and sales practices, the reduction in costs through collective bargaining of packing materials, transportation, and shipping, and the finding of new markets and the redressing, to a certain extent, of the passive trade balance resulting from the "open door" policy.

If the Ichud is put into operation during 1938-39, it can probably control about 7 million boxes. Since packing materials are practically all imported, marked reductions may be made for such large orders as are placed by such a union, and cheaper transportation and shipping rates may be secured. The same bargaining power may also be used to obtain markets for Palestine oranges in the countries supplying the necessary packing materials. Finally, it is expected that through the adoption and improvement of only one or two brands, high-quality oranges produced in Jewish groves will become well known and thus obtain a premium over the cheaper-grade fruit produced by the Arabs. As it is at present, consumers in European countries refer to Palestine oranges as "Jaffas," regardless of the quality. This has often meant that, after the high-quality Jewish-owned fruit had succeeded in gaining a foothold in a market, the cheaply produced Arab orange came in and either reaped the profit or depressed prices. It is thus expected that the Ichud will teach European consumers to ask not only for "Jaffa" oranges, but for "Jaffa X" or "Jaffa Y" oranges.

Table 26. Per-capita disappearance of oranges in specified countries, 1926-1937

Year	: United : States : Pounds	: United : Kingdom : Pounds	: Canada : Pounds	: France : a/ : Pounds	: Sweden : Pounds	: Germany : Pounds
1926.....	24.3	19.3	15.8	7.1	4.1	6.7
1927.....	19.1	18.9	18.5	6.9	4.6	7.3
1928.....	32.8	18.4	15.7	7.4	5.1	9.0
1929.....	17.1	22.0	21.8	6.7	5.6	8.2
1930.....	33.2	23.4	14.8	10.6	9.5	12.1
1931.....	27.7	24.2	b/ 14.6	10.7	10.1	9.5
1932.....	29.6	21.8	14.4	12.3	9.4	8.1
1933.....	27.2	27.0	13.5	16.1	11.9	9.1
1934.....	33.4	25.0	14.0	16.4	12.3	8.9
1935.....	25.3	24.6	15.2	11.4	12.3	8.0
1936.....	27.6	22.7	16.3	12.0	12.3	8.9
1937 c/.....	35.8	29.7	15.7	12.4	13.4	3.1

Compiled from official sources.

a/ Includes some lemons. b/ Reported in value only; quantity estimated.

At the beginning of the 1938-39 season, the citrus-marketing cooperative organizations of Palestine had not reached a final agreement for the formation of the Ichud. It is believed, however, that an agreement may yet be concluded for (1) collective purchasing of packing materials; (2) united negotiations with steamship companies, with a view to obtaining cheaper freight rates and better shipping facilities; and (3) regulation of exports to prevent the glutting of foreign markets. If such an agreement is reached, it may help in obtaining some reduction in marketing costs. 2/

The lengthening of the orange export season may result from the grafting, in recent years, of Valencia oranges on young grapefruit trees. This not only will extend the shipping season another month or month and a half, but will eliminate some of the large number of grapefruit trees planted prior to 1934. In the past 3 years and as a result of low prices in foreign markets, almost no grapefruit has been planted in Palestine. During this period, Jews budded to Valencia oranges about 50 percent of all their unbudded citrus groves and a considerable proportion of their young grapefruit trees in zones 1, 2, and 3, extending throughout the coastal plain from Gaza to Haifa (see figure 1). Arabs in these three zones began to do the same thing in 1936-37. No statistics are available on the acreage in trees budded to Valencias, but there is no doubt that in the next 4 or 5 years there will be an increase in the production and export of Valencias.

There are conflicting opinions in Palestine regarding the degree of success of Valencia production in that country. While it is agreed that these oranges may have to be removed from the trees in April because of infestation by the Mediterranean Fruit Fly, some experts believe they could stand storage until June without losing their flavor, although they would shrink some under ordinary storage conditions.

The opening of new markets through the possible development of trade agreements with orange-importing countries, especially some of those countries that have an active balance of trade with Palestine, depends upon the future of the "open door" policy (see page 29). On various occasions, representatives of the citrus industry have appealed to the British Government and the League of Nations to free the foreign trade of Palestine from the restrictions imposed on it by virtue of Article 13 of the Palestine Mandate, but without success. It is believed in Palestine that as long as the country cannot obtain reciprocity of trade with other countries, it will be difficult to increase orange exports. It is said that many countries now enjoying an active balance of trade with Palestine have a low per-capita consumption of oranges, which could be increased, and that reciprocal trade agreements with those countries would benefit orange exports. It is further contended that, if Palestine is to remain a British Mandate without power to negotiate direct trade agreements with other countries, Jaffa oranges should at least be extended the benefits of Imperial preference in the British market in order to compete more successfully with other oranges.

3/ A committee of three set up to report on the possibility of creating a central organization of all Jewish citrus growers published its findings in August 1938 in the form of recommendations. These were unanimously accepted by the citrus-marketing cooperatives as a basis for the formation of the Ichud, which may begin functioning during the 1938-39 season. A summary of the recommendations of the committee is given in the appendix.

PRODUCTION AND MARKETING OF OTHER CITRUS FRUIT

Grapefruit

The grapefruit is the youngest of the Palestine citrus family. Although the shaddock, which is believed by many to be the wild parent of the grapefruit, has been cultivated in Palestine since the Middle Ages, the grapefruit in its present form was not known in that country before 1913. During that year, Mr. Abraham Brill, of the Palestine Jewish Colonization Association, visited the United States and studied grapefruit production methods in Florida and California and on his return took several seedlings and budwood of the best varieties.

The first grapefruit trees were planted in the Jewish settlements of Petach Tikvah and Ness Ziona on the Maritime Plain, and the first fruit grown was picked during the World War. Very little was then known about the new fruit; and, since no one was used to its taste, there was little interest shown in it and even the offering of free budwood was not successful in increasing its propagation. In the early twenties as production increased, exports were sent for the most part to Egypt. It was not until experimental shipments to Europe brought high prices that the new fruit attracted the attention of the Palestine citrus growers. From 1924 to 1928, the interest in grapefruit production was so great that the demand for budwood could hardly be satisfied. Arab citrus growers have only recently been won to the value of the new fruit.

Perhaps the most outstanding development in the Palestine citrus industry during the past decade has been the tremendous rate of increase in grapefruit production. Whereas orange production has increased more than 7 times from 1928-29 to 1937-38, or from about 1.9 million to 13.5 million boxes, grapefruit production during the same period expanded almost 700 times or from 3 thousand to 2 million boxes.

Production

In Palestine grapefruit are second in importance only to oranges. Though they may be grown in almost all the citrus regions of that country, they are a specialty in the Valley of Jezreel or Emek and along the southern shores of the Sea of Galilee. In other citrus regions, the grapefruit crop is a minor one, occupying from 8 to 25 percent of the acreage. There are no available statistics of the acreage of grapefruit in Palestine, but it is estimated to be about 12 percent of the 74,000 acres now under citrus production, or a total of about 9,000 acres. Of this, only about 4,000 acres are over 5 years old compared with 187,000 acres in the United States in 1937. It has been estimated that grapefruit plantings account for approximately the following percentages in the various citrus zones of Palestine (see figure 1):

- Zone 1 - From 4 to 5 percent of the Arab- and from 20 to 25 percent of the Jewish-owned groves;
- Zone 2 - 5 percent in the southern portion, through Petach Tikvah, and about 20 percent in the northern portion called the Sharon;
- Zone 3 - About 5 percent;
- Zone 4 - Practically nil;
- Zones 5 and 6 - From 95 to 98 percent;

- Zone 7 - 90 percent along the shores of the Sea of Galilee and from 95 to 98 percent along both banks of the Jordan;
- Zone 8 - About 5 percent;
- Zone 9 - Practically nil.

Because it is grown successfully in zones of different soils and climates, the grapefruit matures and is picked in Palestine from September in the Jordan Valley to April in the Maritime Plain. Almost all the grapefruit grown is of the Marsh Seedless variety, the few Duncan trees planted having been grafted to Marsh. Very recently, the Thompson Pink variety has been tried on a small scale. It is generally agreed that the grapefruit of Palestine is of good quality, although it does not measure up to the fruit produced in some sections of the United States.

The bulk of the grapefruit is planted in heavy soil containing from 40 to 75 percent clay and silt, and the sour orange is generally used as root stock. Grapefruit budded on that stock has a large and vigorous growth, gives a crop in the third year after budding, and is a constant and abundant bearer of good fruit. Only about 10 percent of grapefruit plantings have been budded on sweet lime. When budded on this stock, however, the grapefruit tree flattens out and degenerates early, that is, in about 15 years.

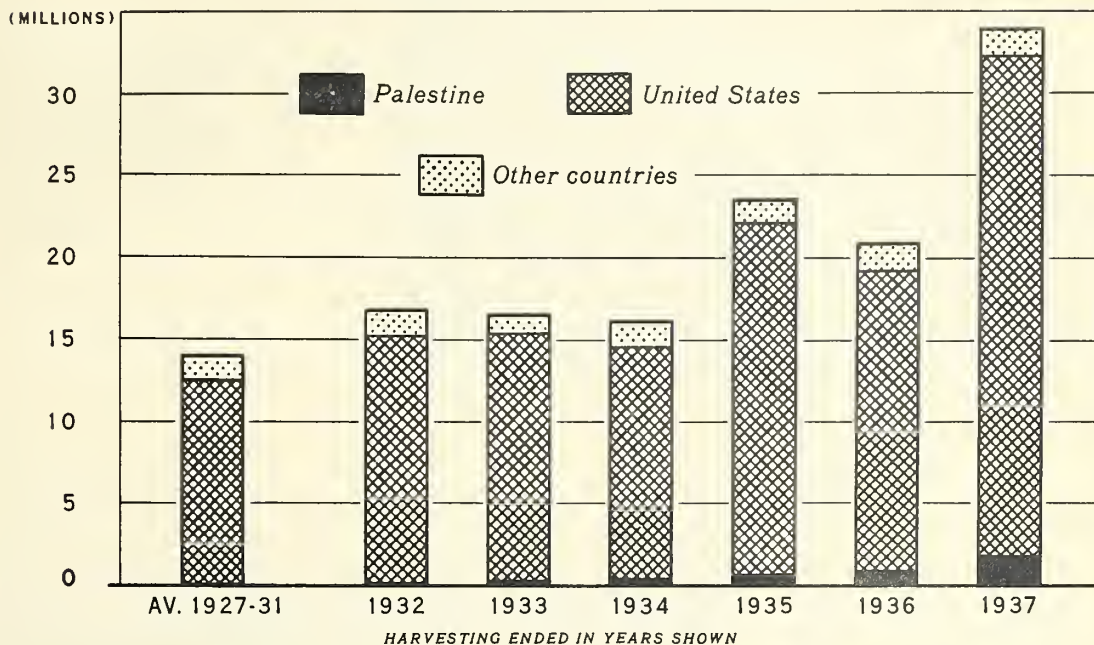
In general, the space between grapefruit trees is wider than between orange trees, especially in the citrus regions of northern Palestine. On an average, however, about 160 trees are planted to the acre, although a great many groves are more densely planted. In the United States, on the other hand, a much wider space is left between trees, with only about 65, 66, and 82 trees per acre in Florida, Texas, and California, respectively.

Until about 5 years ago, it was customary to cultivate grapefruit groves very frequently, but in recent years the tendency has been to decrease both machine and hand cultivation. A large portion of the groves are hoed or plowed in the spring and fall and once, or at most twice, in the summer. Grapefruit is irrigated somewhat more frequently than oranges. In northern Palestine, especially zones 5 and 6, furrow irrigation is the rule, whereas border irrigation predominates in the Jordan Valley. In the other citrus zones, basin irrigation is general, although overhead or furrow irrigation is used in some large groves where labor-saving machinery is employed.

Palestine produces by far more grapefruit per acre than any other country. In general, however, yields in the Jezreel and Jordan Valleys are somewhat lower than in the rest of the country, largely because of unfavorable climatic conditions. On an average, the principal grapefruit groves outside these two districts yield more than 600 boxes per acre, with some orchards producing over 1,000 boxes. In 1937-38, the average yield per acre for the four grapefruit-producing States of the United States was only about 163 boxes, Arizona ranking highest with 198 boxes and California lowest with 115 boxes.

Since the 1934-35 season, Palestine has been the world's second largest grapefruit producer, coming after the United States. Prior to that year, Puerto Rico held that position (see table 27). In 1937-38, Palestine produced about 2 million boxes of grapefruit compared with a total estimated crop of 31 million in the United States.

**GRAPEFRUIT: ESTIMATED PRODUCTION IN PALESTINE, UNITED STATES,
AND OTHER PRINCIPAL EXPORTING COUNTRIES,
AVERAGE 1927-31, ANNUAL 1932-37**



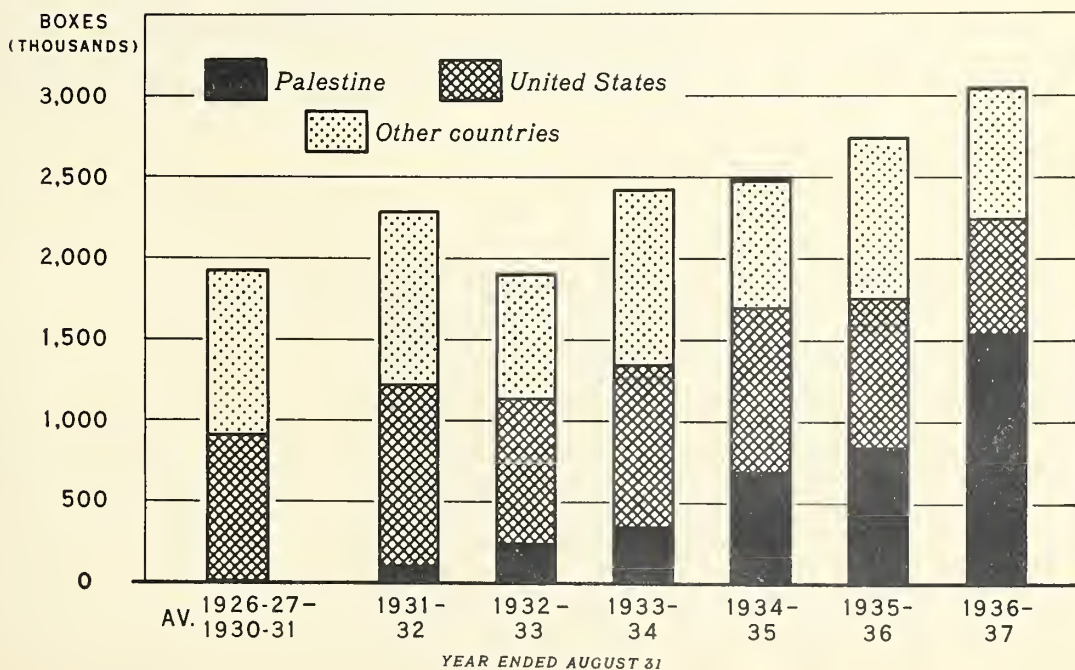
U. S. DEPARTMENT OF AGRICULTURE

NEG. 34349

BUREAU OF AGRICULTURAL ECONOMICS

Fig. 28.

**GRAPEFRUIT, FRESH: EXPORTS FROM PALESTINE, UNITED STATES,
AND OTHER COUNTRIES, AVERAGE 1926-27 TO 1930-31,
ANNUAL 1931-32 TO 1936-37**



U. S. DEPARTMENT OF AGRICULTURE

NEG. 34350

BUREAU OF AGRICULTURAL ECONOMICS

Fig. 27

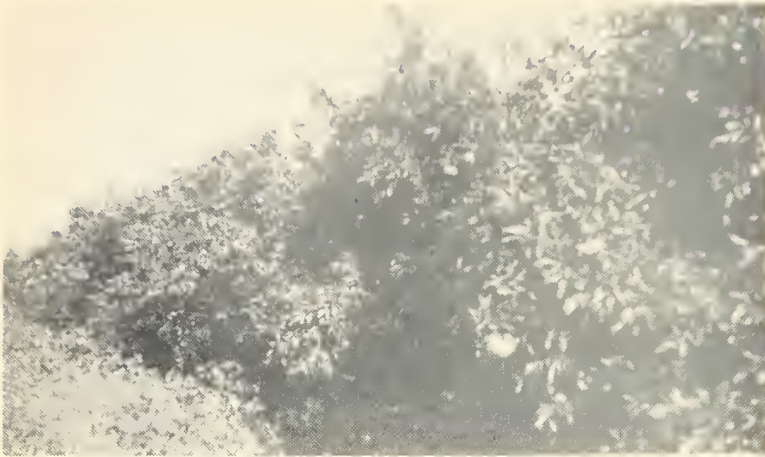


Fig. 28. Eight-year old Marsh seedless grapefruit in a Jewish grove at Gan Chaim, 17 miles northeast of Jaffa. Note weeds in the left-hand corner to be plowed under.

Fig. 29. Eight-year old Marsh seedless grapefruit on sour stock near Jewish settlement of Petach Tikvah, 8 miles east of Jaffa. They are planted 160 trees to the acre and yield 800 boxes to the acre. Hand labor is used in cultivation.



Fig. 30. Seven-year old Marsh seedless grapefruit orchard in the Arab district of Jaffa. Trees are 14 feet apart.

From 1932 to 1936, under the stimulus of high prices, Palestine citrus growers almost doubled their grapefruit acreage; and it is believed that in 1942-43, when most of the present acreage will be of full-bearing age, Palestine production may reach 4.5 million boxes. The prospect of such a crop is causing some concern to the citrus growers of that country, who during the past two seasons were unable to market their product at a reasonable profit. Not only has this resulted in the practical cessation of planting since 1936 but some Valencia oranges have been grafted on young grapefruit trees in order to reduce future production.

Table 27. Estimated production of grapefruit in principal exporting countries, average 1927-1931, annual 1932-1937 a/

Country	Average:						
	1927-1931	1932	1933	1934	1935	1936	1937
	boxes	boxes	boxes	boxes	boxes	boxes	boxes
United States.....	12,556	15,147	15,149	14,243	21,357	18,329	30,680
Puerto Rico <u>b/</u>	1,100	950	525	800	650	800	650
Cuba <u>c/</u>	225	300	125	225	200	250	225
Jamaica <u>c/</u>	100	125	175	150	210	180	185
Union of South Africa <u>c/</u> :	112	200	325	375	350	400	450
Palestine <u>c/</u>	30	120	270	400	760	940	1,700

Compiled from official sources.

a/ Harvesting ends in year shown. b/ Based on exports of fresh and canned fruit, with an allowance for domestic consumption and waste. c/ Based on exports, with allowance for domestic consumption and waste.

Importance of exports

Since the 1936-37 season, Palestine has been the world's largest exporter of fresh grapefruit. Previously the United States had occupied that position. In fact, as recently as 1931-32 the United States exported more than 10 times as much fresh grapefruit as did Palestine. From that year to date, however, as average American exports declined slightly, exports from Palestine expanded to almost 18 times their 1931-32 volume (see tables 3 and 28).

Table 28. Exports of fresh grapefruit from principal countries, average 1926-27 to 1930-31, annual 1931-32 to 1936-37

Country	Year ended August 31						
	Average:						
	1927-1931	1932	1933	1934	1935	1936	1937
	boxes	boxes	boxes	boxes	boxes	boxes	boxes
United States.....	899	1,120	905	1,000	1,022	928	704
Union of South Africa...	51	157	260	298	284	326: <u>a/</u>	364
Puerto Rico <u>b/</u>	672	626	284	470	216	356	150
Cuba.....	198	184	77	185	103	208	150
Jamaica.....	89	99	138	119	167	87	147
Palestine..... <u>c/</u>	14	106	245	353	683	844	1,534

Compiled from official sources.

a/ Estimated from incomplete returns. b/ Shipments to United States and direct exports from Puerto Rico. c/ 4-year average.

In 1937-38, when Palestine exported over 1.3 million boxes of fresh grapefruit, or more than all other principal exporting countries combined, exports from the United States amounted only to 1 million boxes. It is believed that Palestine may continue for some time to be the world's leading exporter of fresh grapefruit.

Estimates made in the United States Bureau of Agricultural Economics indicate that, beginning with the 1938-39 season, even with no increase in the present acreage, Palestine will add every year for the next 5 years between 300,000 and 400,000 boxes to the exportable surplus of fresh grapefruit (see table 36). This does not necessarily mean that that many more boxes will be exported every season for the next 5 years. The quantity exported will depend on the demand in foreign markets and the prices offered for the fruit. If present marketing conditions do not improve, the Palestine Government may further restrict the sizes of grapefruit exported (see table 4). This would prevent the glutting of foreign markets but would increase the quantity of grapefruit to be disposed of domestically.

Table 29. Monthly exports of grapefruit from Palestine, 1934-35 to 1937-38

Month	1934-35		1935-36		1936-37		1937-38 a/	
	Quan-	Share	Quan-	Share	Quan-	Share	Quan-	Share
	tity	of	tity	of	tity	of	tity	of
	boxes	Percent	boxes	Percent	boxes	Percent	boxes	Percent
Sept....	0	-	0	-	1	b/	4	0.2
Oct....	25	3.5	123	14.5	171	11.1	177	10.0
Nov....	74	10.9	142	16.9	103	7.0	242	13.5
Dec....	83	12.3	123	14.6	142	9.2	208	11.6
Jan....	111	16.3	113	13.4	196	12.3	125	7.0
Feb....	138	20.2	165	19.5	284	18.5	289	16.1
Mar....	115	16.8	147	17.4	307	20.0	423	23.6
Apr. ...	111	16.2	31	3.7	315	20.5	283	15.8
May....	26	3.8	0	-	9	.6	38	2.1
June....	0	-	0	-	5	.3	1	.1
July....	0	-	0	-	1	b/	0	0
Aug....	0	-	0	-	0	-	0	0
Total..	683	100.0	844	100.0	1,539	100.0	1,790	100.0

Compiled from Palestine Commercial Bulletin.

a/ Preliminary.

b/ Less than one-tenth of 1 percent.

The Palestine export season for grapefruit is longer than that for oranges (see tables 15 and 29). Grapefruit is exported from October to May, inclusive, and in recent years some small shipments have taken place in September and June. The 3 months of heaviest exports are February, March, and April, when on an average over 50 percent of shipments occur. While the Palestine season does not, on the whole, conflict with that of the United States, April, May, and October shipments compete directly with early and late arrivals of American fruit on European markets.

Table 30. Grapefruit exports from Palestine, by countries of destination, 1932-33 to 1937-38

Country of destination	1932-33			1933-34			1934-35			1935-36			1936-37			1937-38 a/		
	Quan- tity	Share of total	Per- cent	Quan- tity	Share of total	Per- cent	Quan- tity	Share of total	Per- cent	Quan- tity	Share of total	Per- cent	Quan- tity	Share of total	Per- cent	Quan- tity	Share of total	Per- cent
United Kingdom and:	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-	1,000	Per-
Ireland.....	195	74.3	77.7	317	77.7	85.5	677	85.5	626	73.7	1,102	71.4	1,023	58.4	58.4	1,023	58.4	58.4
Netherlands.....	12	4.6	2.5	10	2.5	1.2	10	1.2	32	3.9	54	3.5	63	3.6	3.6	63	3.6	3.6
Poland.....	1	.4	3.0	12	3.0	1.2	10	1.2	16	1.9	25	1.6	34	2.0	2.0	34	2.0	2.0
Germany.....	15	5.6	5.4	22	5.4	2.0	16	2.0	15	1.8	74	4.9	50	2.8	2.8	50	2.8	2.8
Sweden.....	2	.6	1.0	4	1.0	.4	3	.4	13	1.5	25	1.6	46	2.6	2.6	46	2.6	2.6
Rumania.....	2	.8	.6	3	.6	.3	2	.3	7	.7	16	1.0	34	2.0	2.0	34	2.0	2.0
France.....	5	2.0	2.5	10	2.5	3.5	23	3.5	36	4.3	37	5.7	125	7.1	7.1	125	7.1	7.1
Norway.....	3	1.3	1.3	5	1.3	.9	7	.9	10	1.1	16	1.0	27	1.5	1.5	27	1.5	1.5
Denmark.....	4	1.3	1.9	8	1.9	.7	5	.7	11	1.3	3	.6	15	.8	.8	15	.8	.8
Belgium.....	2	.8	2.2	9	2.2	1.7	13	1.7	21	2.5	65	4.2	132	10.4	10.4	132	10.4	10.4
Czechoslovakia.....	2	.6	c/	b/	c/	.5	4	.5	6	.7	19	1.2	32	1.9	1.9	32	1.9	1.9
Switzerland.....	6	2.2	.3	1	.3	1.2	9	1.2	16	1.9	23	1.4	50	2.8	2.8	50	2.8	2.8
Finland.....	b/	.1	.1	b/	.1	c/	b/	c/	2	.2	4	.3	7	.4	.4	7	.4	.4
Latvia.....	b/	c/	-	d/	-	c/	b/	c/	2	.3	3	.2	4	.3	.3	4	.3	.3
Soviet Union.....	b/	c/	-	d/	-	c/	b/	c/	b/	c/	2	.1	d/	-	-	d/	-	-
Bulgaria.....	b/	c/	c/	b/	c/	c/	b/	c/	b/	c/	1	c/	1	c/	c/	1	c/	c/
Yugoslavia.....	b/	c/	.1	b/	.1	c/	b/	c/	1	.2	4	.3	5	.3	.3	5	.3	.3
Austria.....	1	.5	.1	1	.1	.1	1	.1	2	.2	6	.4	10	.6	.6	10	.6	.6
Hungary.....	d/	-	-	d/	-	-	d/	-	6	.7	4	.3	6	.3	.3	6	.3	.3
Lithuania.....	b/	c/	-	d/	-	-	d/	-	d/	-	d/	-	2	.1	.1	2	.1	.1
Canada.....	5	2.0	.2	1	.2	c/	b/	c/	18	2.2	d/	-	30	1.7	1.7	30	1.7	1.7
India and Far East:	6	2.2	.3	1	.3	.4	3	.4	4	.5	d/	-	b/	-	-	b/	-	-
Egypt.....	b/	.1	.4	2	.4	.2	2	.2	3	.4	d/	-	b/	-	-	b/	-	-
Aden.....	d/	-	c/	b/	c/	.1	1	.1	1	.1	d/	-	b/	-	-	b/	-	-
Ceylon.....	1	.4	c/	b/	c/	.1	1	.1	1	.1	d/	-	b/	-	-	b/	-	-
Arabia.....	d/	-	c/	b/	c/	-	d/	-	b/	c/	d/	-	b/	-	-	b/	-	-
Other countries...	b/	.2	.4	2	.4	c/	b/	c/	1	c/	5	.3	6	.4	.4	6	.4	.4
Total.....	262	100.0	408	100.0	792	100.0	850	100.0	1,542	100.0	1,750	100.0	1,750	100.0	100.0	1,750	100.0	100.0

Compiled from Weekly Fruit Intelligence Notes and annual Fruit Supplies of the Imperial Economic Committee, London. Totals differ slightly from those given in the Palestine Commercial Bulletin, but that publication does not show exports by countries of destination on a marketing-year basis.

a/ Preliminary. b/Less than 500 boxes. c/ Less than one-tenth of 1 percent. d/ If any, included in others

Like oranges, grapefruit from Palestine is marketed almost exclusively in Europe, with the United Kingdom taking about three times as much as all the countries of the Continent combined. During the 6-year period, 1932-33 to 1937-38, these takings averaged 73 percent of exports, although there was a slight decline in favor of continental European countries during the last two seasons. Until 4 or 5 years ago, however, imports of grapefruit into those countries were so insignificant that they were not separately classified in their trade returns.

From 1933 to 1938, the following changes in distribution of Palestine grapefruit in Europe have occurred: Imports into the United Kingdom expanded 5 times as against an increase of 13 times in those of continental Europe; imports into Belgium increased 90 times and made this country the principal customer on the Continent; Germany fell from first to fourth position as an importer.

Leaders in the Palestine citrus industry believe that there are still possibilities for greater consumption of their grapefruit in continental Europe. They contend that all that is needed to increase imports there is a good educational campaign to teach the value of the fruit to the consumer. Judging from the great expansion of imports into continental European countries during the past 6 years that accompanied the aggressive advertising campaign of the Palestine citrus trade, it is not improbable that the increasing grapefruit crop of that country may find greater outlets in continental Europe.

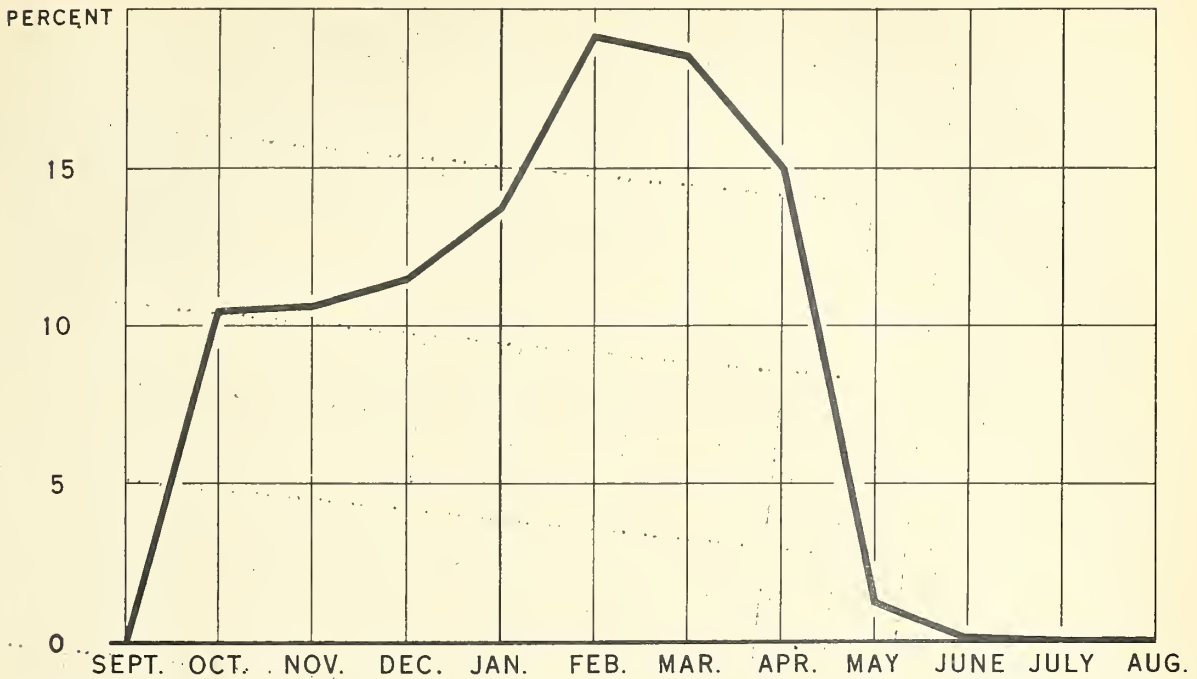
Outside Europe, Canada is the principal consumer of Palestine grapefruit. In spite of the favorable tariff treatment granted to Palestine since September 1937, however, prospects for this fruit in Canada are not believed bright because of keen competition from the United States and the British West Indies.

The British market

The United Kingdom is by far the largest consumer of fresh grapefruit in Europe. Imports from all sources increased from 778,000 boxes in 1930 to 1,847,000 boxes in 1937. The outstanding change during that 3-year period, however, has been the decline of the United States as principal supplier and the rise of Palestine to that position. Grapefruit imports from the United States fell from a yearly average of 650,000 boxes, or 67.3 percent of the total, during the 3-year period 1930-1932, to 245,000 boxes, or only 15 percent of the total, during the 3-year period 1935-1937. During the same 3-year periods, imports from Palestine averaged 57,000 boxes, or 5 percent of the total, and 792,000 boxes, or 46 percent of the total, respectively. In 1937-38, Palestine supplied over 1 million boxes, or more than all other countries combined. (See table 31 and figure 32).

The United Kingdom imports grapefruit during every month of the year, but supplies from October to April come principally from Palestine. The British West Indies are also important grapefruit suppliers during those months. Their product competes with the Palestine fruit because it is produced at lower cost and enjoys free entry into the British market. Except for early and late shipments, grapefruit from the United States does not meet any competition from the Palestine product.

PALESTINE: MONTHLY EXPORTS OF GRAPEFRUIT IN PERCENTAGE OF YEARLY TOTAL, 3-YEAR AVERAGE 1934-35-1936-37



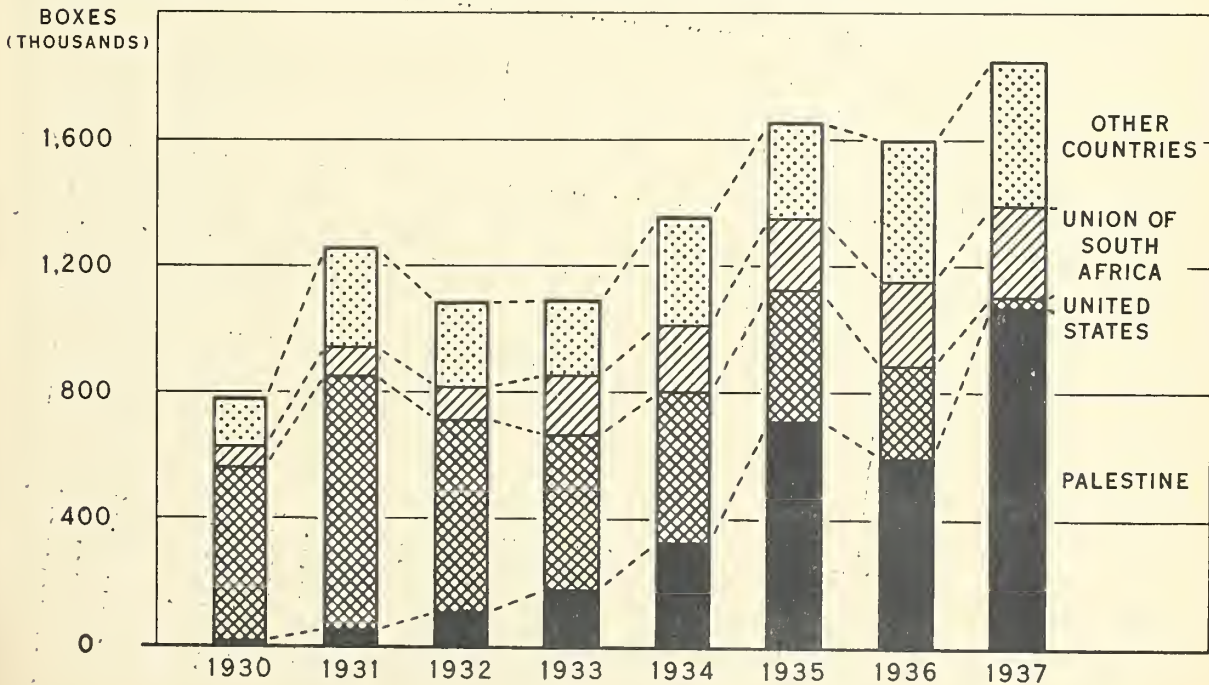
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Fig. 31.

UNITED KINGDOM: IMPORTS OF GRAPEFRUIT BY SPECIFIED COUNTRIES OF ORIGIN, 1930-37



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Fig. 32.

Table 31. Imports of grapefruit into the United Kingdom, by countries of origin, 1930-1937

Country	1930			1931			1932			1933		
	Quantity	Percentage	of total	Quantity	Percentage	of total	Quantity	Percentage	of total	Quantity	Percentage	of total
	1,000 boxes	Percent		1,000 boxes	Percent		1,000 boxes	Percent		1,000 boxes	Percent	
Empire countries	a/	b/		1	0.08		3	0.28		3	0.28	
British Honduras...	35	4.50		49	3.91		101	9.34		98	9.02	
British West Indies.....	14	1.80		51	4.07		105	9.70		181	16.67	
Palestine c/	66	8.48		91	7.25		105	9.70		187	17.22	
South Africa.....	11	1.42		1	.08		a/	b/		a/	b/	
Other Empire countries.....	126	16.20		193	15.39		314	29.02		469	43.19	
Total Empire countries...	-	-		3	.24		4	.37		4	.37	
Other countries	a/	b/		1	.08		13	1.20		8	.74	
Argentina.....	52	6.68		113	9.01		59	5.45		30	2.76	
Brazil.....	a/	b/		-	-		-	-		1	.08	
Cuba.....	56	4.63		111	8.85		50	4.62		46	4.24	
Honduras.....	7	.90		17	1.36		25	2.31		55	3.22	
Puerto Rico.....	547	70.31		798	63.64		606	56.01		483	44.47	
Portuguese East Africa.....	10	1.28		18	1.43		11	1.02		10	.92	
United States.....	652	83.80		1,061	84.61		768	70.93		617	56.81	
Others.....	778	100.00		1,254	100.00		1,082	100.00		1,086	100.00	
Total other countries....												
Total all countries.....												

Continued -

Table 31. Imports of grapefruit into the United Kingdom, by countries of origin, 1930-1937 - Continued

Country	1934		1935		1936		1937	
	Quantity : of total	Percentage : of total	Quantity : of total	Percentage : of total	Quantity : of total	Percentage : of total	Quantity : of total	Percentage : of total
	1,000 boxes	Percent	1,000 boxes	Percent	1,000 boxes	Percent	1,000 boxes	Percent
Empire countries								
British Honduras..	13	0.96	11	0.67	14	0.88	10	0.55
British West Indies.....	165	12.20	139	8.43	195	12.21	130	7.04
Palestine c/	529	24.34	713	43.24	594	37.20	1,068	57.82
South Africa.....	213	15.76	224	13.58	264	16.53	288	15.59
Other Empire countries.....	1	.07	1	.06	5	.31	6	.32
Total Empire countries....	721	53.33	1,083	65.98	1,072	67.13	1,502	81.32
Other countries								
Argentina.....	24	1.78	14	.85	15	.94	17	.91
Brazil.....	33	2.44	59	3.58	86	5.38	201	10.90
Cuba.....	28	2.07	14	.85	41	2.57	13	.70
Honduras.....	3	.22	8	.48	29	1.82	18	.93
Puerto Rico.....	27	2.00	11	.67	4	.25	d/	d/
Portuguese East Africa.....	34	2.51	28	1.70	45	2.69	46	2.50
United States.....	470	34.76	410	24.86	290	18.16	34	1.84
Others.....	12	.89	17	1.03	17	1.06	16	.90
Total other countries....	631	46.67	561	34.02	525	32.87	345	18.68
Total all countries.....	1,352	100.00	1,649	100.00	1,597	100.00	1,847	100.00

Compiled from Fruit Supplies, a supplement to Weekly Fruit Intelligence Notes; Imperial Economic Committee, London, 1936 and 1937. Converted from hundredweight of 112 pounds to boxes of 80 pounds net.
a/ Less than 1,000 boxes. b/ Less than one-tenth of 1 percent. c/ British Mandated Territory. d/ If any, included in others.

Representations have often been made to the British Government by leaders of the Palestine citrus industry with a view to obtaining free entry into the United Kingdom or preferential tariff rates for their grapefruit. So far these protests have proved fruitless and Palestine grapefruit continues to pay the same duty as that shipped from the United States, i.e., 5 shillings per hundredweight (about 1 cent per pound).

Table 32. Monthly imports of grapefruit into the United Kingdom, by countries of origin, 1936 and 1937

Year and month :	South Africa :	British West Indies :	Palestine :	United States :	Brazil and Argentina :	Other countries :	Total
1936	1,000 boxes	1,000 boxes	1,000 boxes	1,000 boxes	1,000 boxes	1,000 boxes	1,000 boxes
Jan.....	0	6	57	3	0	1	67
Feb.....	0	18	109	3	0	3	133
Mar.....	0	27	123	4	0	1	155
Apr.....	0	35	31	42	1	6	115
May.....	1	15	3	56	23	20	118
June.....	31	3	0	76	39	32	181
July.....	75	0	0	60	10	24	169
Aug.....	126	0	0	7	10	12	155
Sept.....	28	34	0	15	11	31	119
Oct.....	3	44	98	18	7	18	188
Nov.....	0	5	80	2	0	1	91
Dec.....	0	8	92	4	0	2	106
Total...	264	195	593	290	101	154	1,597
1937							
Jan.....	0	10	103	3	0	0	116
Feb.....	0	14	178	6	0	0	198
Mar.....	0	10	221	3	0	0	234
Apr.....	0	29	168	1	10	3	211
May.....	3	5	90	1	66	4	169
June.....	32	1	1	0	64	28	126
July.....	92	0	1	0	56	15	164
Aug.....	132	0	0	3	12	10	157
Sept.....	28	7	0	7	10	18	70
Oct.....	1	25	49	4	0	15	94
Nov.....	0	17	112	3	0	13	145
Dec.....	0	12	145	3	0	3	163
Total...	288	130	1,063	34	218	109	1,847

Compiled from Fruit Supplies, a supplement to Weekly Fruit Intelligence Notes, Imperial Economic Committee, London, 1936 and 1937. Converted from hundred-weight of 112 pounds to boxes of 80 pounds net.

Although exports of American fresh grapefruit to the British market declined sharply during the past 3 years, prospects have improved for the American grapefruit industry as a result of the signing, on November 17, 1938, of the Reciprocal Trade Agreement between the United States and the United Kingdom. According to the terms of this agreement, the 15-percent ad-valorem rate now paid on canned grapefruit and grapefruit juice entering the United Kingdom will be abolished on January 1, 1939. Since almost all canned grapefruit and grapefruit juice imported into the United Kingdom originate in the United States, any reduction in the price paid by the British consumer resulting from the

abolition of the present ad-valorem duty may increase imports of these products. At the same time, since the canned fruit can be marketed during any month of the year, increased imports from the United States may compete directly with Palestine fresh grapefruit during the months it is imported into the United Kingdom. The abolition of the ad-valorem rate on canned grapefruit and grapefruit juice will not immediately benefit Palestine growers as at present the grapefruit byproduct industry is practically nonexistent in that country.

In spite of the tremendous increase in British imports of grapefruit from Palestine during the past 8 years, Palestine producers realize that that market cannot continue to absorb increasing quantities of their fruit and they are trying to establish their product in continental Europe. It will not be surprising, therefore, if in the future the share of the United Kingdom in Palestine grapefruit exports continues to decline in favor of continental European countries.

Lemons

Production

Lemons are a minor crop in the Palestine citrus industry, representing less than 1 percent of total citrus production. Except for the Jericho district, or zone 9 (see figure 1), where lemons are produced almost exclusively, lemon production is insignificant. Some attention has been given to it in the past 5 years, however, when a number of small lemon groves were planted in various districts.

The principal variety grown is a local fruit referred to as "Boledi" (Arabic for native) or "Laimoon Maleh" (Arabic for sour lemon), which resembles the Lisbon. Most of the plantings that have taken place in the past 4 or 5 years, however, have been of Eureka lemons. This variety now accounts for about 10 or 15 percent of the total acreage. The local variety is much higher in quality than the Eureka but produces its main crop in the winter. With light soil and proper irrigation, however, it is possible to obtain a large percentage of the crop between August and October. The average yield is quite high, between 700 and 800 export boxes per acre for full-bearing groves in good condition. The Eureka lemon bears in the same seasons as in California, although the yields in Palestine are higher.

The rootstocks used in the production of lemons are the sweet lime on light, and the sour orange on heavy, soils. When budded on sweet lime (and when this stock is not itself affected by Xyloporosis), it produces a very large, rank-growing tree, which is an early and abundant bearer of large fruit. On sour orange, the lemon tree also gets a large and vigorous growth, is long-lived, and is a constant and abundant bearer of good fruit. Unlike those in California, trees budded on sour stock show no evidence of decline.

Many of the diseases and pests attacking the orange and grapefruit of Palestine also affect lemons, with the addition of Mal Secco, a disease causing much damage to the Italian lemon industry. It is not generally spread in the lemon groves of Palestine but is found only in spots. There are no known methods of control. When a tree is affected and begins to die at the top, the sick parts are continuously cut until the whole tree is cut away.

There are no available statistics on lemon acreage and production in Palestine. Estimates made in the United States Bureau of Agricultural Economics, however, indicate that in 1937-38 production totaled about 120,000 boxes, of which almost one-third was consumed within the country. Because of new plantings in the past 5 years, the United States Bureau of Agricultural Economics has estimated that by 1942-43 the Palestine lemon crop may reach 200,000 boxes.

The lemon tree in Palestine grows remarkably fast, reaches a great size, and bears abundant crops. There is no doubt that Palestine conditions are almost ideally suited for lemon production, and it is mainly the present lack of export markets that prevents a greater development of the industry.

Exports

Although Palestine produces only an insignificant quantity of lemons, it ranks fifth as a world exporter of this fruit, though far behind such countries as Italy and Spain. Exports increased from a little over 20,000 boxes in 1933-34 to 77,000 boxes in 1937-38. Estimates made in the United States Bureau of Agricultural Economics indicate that, as a result of plantings during the past 5 years, exports will continue to increase and may reach in 1942-43 between 140,000 and 150,000 boxes.

Lemons are exported from Palestine from August to April, inclusive, with the months of highest shipment being September, October, December, January, and February.

Table 33. Monthly exports of lemons from Palestine,
1934-35 to 1937-38

	1934-35		1935-36		1936-37		1937-38 a/	
Month	Quantity:	Share of total	Quantity:	Share of total	Quantity:	Share of total	Quantity:	Share of total
	1,000 boxes	Percent	1,000 boxes	Percent	1,000 boxes	Percent	1,000 boxes	Percent
Aug....	-	-	-	-	2	3.0	5	6.6
Sept....	4	16.6	7	13.1	8	10.5	12	15.3
Oct....	10	39.2	6	13.0	17	23.2	17	21.9
Nov....	4	14.0	5	10.2	8	11.6	5	6.6
Dec....	1	3.5	6	11.9	7	9.0	11	14.2
Jan....	1	4.9	7	13.5	8	11.8	10	13.0
Feb....	2	8.6	3	15.9	12	16.2	9	11.8
Mar....	2	6.4	9	17.3	8	11.8	4	5.4
Apr....	2	6.8	2	5.1	2	2.9	3	3.9
May....	-	-	-	-	-	-	1	1.3
June....	-	-	-	-	-	-	b/	c/
July....	-	-	-	-	-	-	b/	c/
Total..	26	100.0	50	100.0	72	100.0	77	100.0

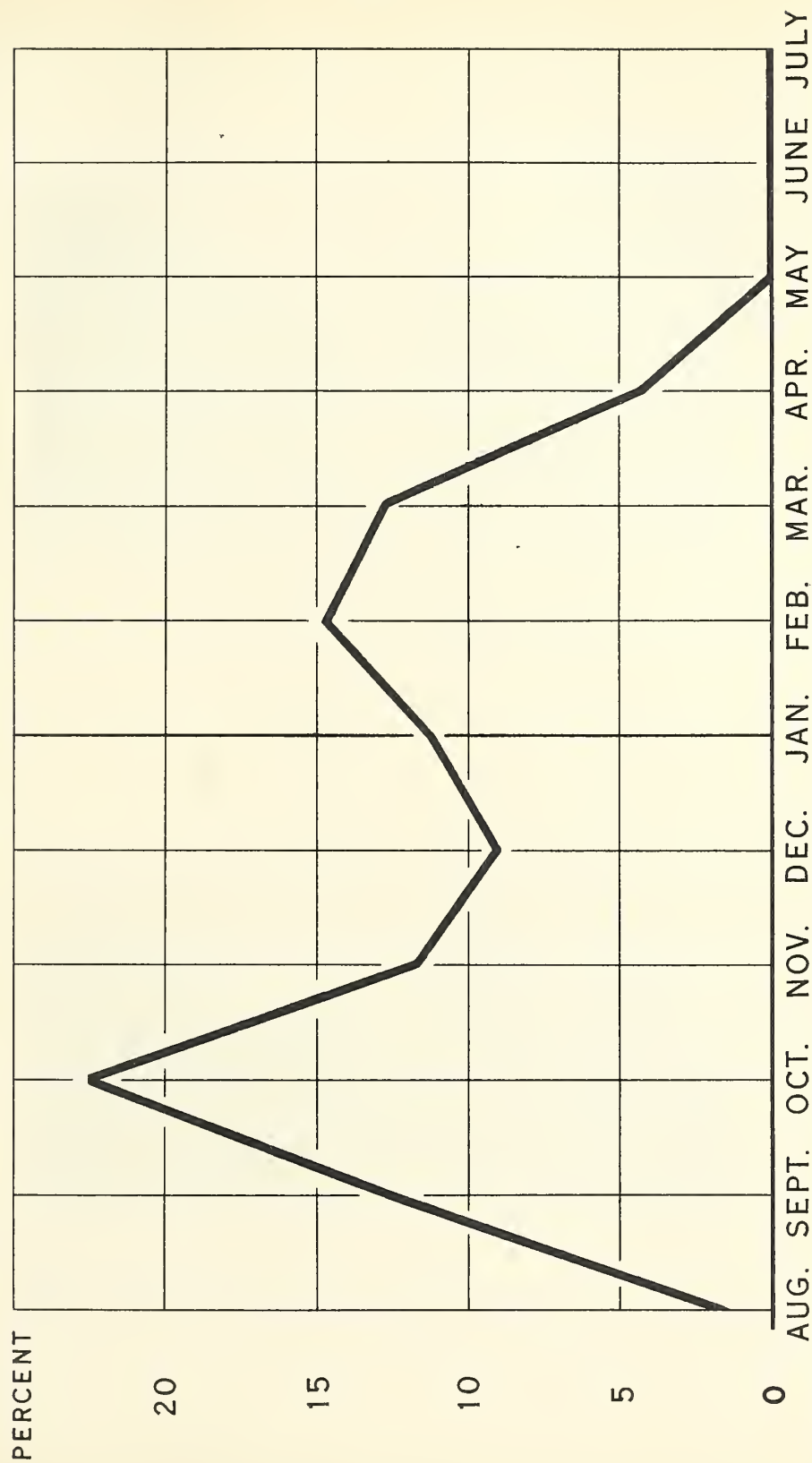
Compiled from Palestine Commercial Bulletin.

a/ Preliminary.

b/ Less than 500 boxes.

c/ Less than one-tenth of 1 percent.

PALESTINE: MONTHLY EXPORTS OF LEMONS IN PERCENTAGE OF YEARLY TOTAL, 3-YEAR AVERAGE 1934-35-1936-37



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Fig. 33



Fig. 34. Nine-year old Eureka lemon trees on sour stock in the Jewish settlement of Gan Chaim, 17 miles northeast of Jaffa. They yield 5 export boxes per tree.



Fig. 35. Nursery-budded Eureka lemon trees on sour orange, planted in grove in July 1937 in a Jewish settlement northeast of Jaffa. Picture was taken in the rain, January 1938. Note Cypress windbreaks.

The United Kingdom is the principal buyer of Palestine lemons, as it is of oranges and grapefruit. In recent years that country has taken, on an average, over 50 percent of total exports. The bulk of lemon imports into the United Kingdom, however, come from Italy, with Spain normally ranking second as a source of supply.

Table 34. Monthly imports of lemons and limes into the United Kingdom by principal countries of origin, 1936 and 1937

Year and month	Italy	Spain	Other countries	Total
	1,000 boxes	1,000 boxes	1,000 boxes	1,000 boxes
1936:				
Jan.....	0	21	14	35
Feb.....	30	32	34	96
Mar.....	1	55	57	113
Apr.....	4	49	72	125
May.....	10	50	34	94
June.....	12	121	45	178
July.....	18	50	40	108
Aug.....	30	14	22	66
Sept.....	32	15	49	96
Oct.....	59	41	108	208
Nov.....	115	59	43	217
Dec.....	99	25	6	130
Total.....	410	532	524	1,466
1937:				
Jan.....	133	10	6	149
Feb.....	150	25	41	216
Mar.....	82	46	19	147
Apr.....	46	24	6	76
May.....	60	22	3	85
June.....	98	52	7	157
July.....	79	34	10	123
Aug.....	69	4	16	89
Sept.....	60	14	24	98
Oct.....	89	90	74	253
Nov.....	95	65	22	182
Dec.....	127	7	9	143
Total.....	1,088	393	237	1,718

Compiled from Fruit Supplies, a supplement to Weekly Fruit Intelligence Notes, Imperial Economic Committee, London, 1936 and 1937. Converted from hundred-weight of 112 pounds to boxes of 76 pounds net.

Rumania is also an important customer for Palestine lemons, in some years having taken more than 60 percent of all exports. Less important buyers are Poland, France, and the Netherlands (see table 35).

It is believed that the keen competition met by the Palestine product from Italian and Spanish lemons will continue to discourage any rapid or large-scale expansion of lemon production in Palestine.

Table 35. Lemon exports from Palestine by countries of destination,
1933-34 to 1936-37

Country	1933-34		1934-35		1935-36		1936-37	
	Quan- tity	Share of total	Quan- tity	Share of total	Quan- tity	Share of total	Quan- tity	Share of total
		Per-		Per-		Per-		Per-
United Kingdom and Ireland.....	8,271	40.2	7,651	24.6	25,144	51.0	45,325	55.9
Netherlands.....	79	.4	74	.3	1,305	2.6	1,964	2.4
Poland.....	a/	-	a/	-	2,140	4.3	4,053	5.0
Germany.....	535	2.6	53	.2	a/	-	15	b/
Sweden.....	61	.3	58	.2	770	1.5	734	.9
Rumania.....	8,863	43.2	19,245	61.3	16,339	32.8	25,011	30.9
France.....	1,922	9.3	2,094	6.7	803	1.6	1,959	2.4
Norway.....	a/	-	94	.3	285	.6	a/	-
Denmark.....	18	b/	57	.2	143	.4	350	.4
Belgium.....	138	.7	97	.3	296	.6	161	.2
Czechoslovakia.....	17	b/	133	.6	407	.8	675	.8
Switzerland.....	a/	-	6	b/	195	.4	83	.1
Finland.....	a/	-	a/	-	243	.5	85	.1
Latvia.....	79	.4	a/	-	1,156	2.3	a/	-
Soviet Union.....	a/	-	502	1.6	29	b/	a/	-
Bulgaria.....	a/	-	19	b/	19	b/	68	.1
Yugoslavia.....	a/	-	23	b/	a/	-	35	b/
Austria.....	a/	-	a/	-	50	.1	242	.3
Hungary.....	a/	-	a/	-	2	b/	a/	-
Other Europe.....	21	.1	21	b/	10	b/	a/	-
Total Europe.....	20,014	97.2	30,177	96.8	48,630	99.5	80,760	99.5
India and Far East.....	369	1.8	815	2.6	79	.2	a/	-
Egypt.....	28	.1	a/	-	79	.2	a/	-
Aden.....	a/	-	136	.4	64	.1	a/	-
Ceylon.....	a/	-	37	.1	30	b/	a/	-
Others.....	150	.9	25	.1	a/	-	400	.5
Total other.....	547	2.8	1,013	3.2	252	.5	400	.5
Total.....	20,561	100.0	31,190	100.0	49,882	100.0	81,160	100.0

Compiled from Weekly Fruit Intelligence Notes and annual Fruit Supplies of the Imperial Economic Committee, London. Totals in this table differ slightly from those given in the Palestine Commercial Bulletin. They were used, however, because that publication does not show exports by countries of destination on a marketing-year basis.

a/ If any, included in others. b/ Less than one-tenth of 1 percent.

PRODUCTION AND EXPORT OUTLOOK

As a result of the marked increase in citrus acreage that took place from 1932 to 1936 and that at present is largely nonbearing, Palestine citrus production in the next 5 years will continue to expand. With normal weather conditions, no abandonment of groves or uprooting of trees, and no new plantings from now until 1940 (any planting after that date will not affect production during the following 2 years), it is estimated by the United States Bureau of Agricultural Economics that orange and grapefruit production in Palestine in 1942-43 will total about 29 million boxes, or more than twice the 13.5

million boxes of citrus fruit estimated to have been produced in 1937-38 (see table 36). Of this, about 24.5 million boxes will be oranges and 4.5 million grapefruit. Even if the present production of lemons is doubled by 1942-43, it will not greatly change the outlook for other citrus fruit. The annual figures are rough estimates and serve only to give an idea of the prospective general increase in production from 1938-39 to 1942-43. They are calculated on the basis of the approximate age of plantings and the estimated yield at various ages.

Not only have the low prices of the past two seasons brought planting to a standstill, but during the early part of the 1937-38 season there were already signs of neglect and the uprooting of many established groves occurred. In some groves, returns from the sale of the fruit did not even pay for the upkeep, and marginal producers were beginning to consider the substitution of other crops for their citrus. Unless there is a marked improvement and prices or new markets are soon found, it is not unlikely that more producers will be forced to pull out their trees or abandon their groves.

As the rate of increase in citrus production during the next 5 years will be much faster than that of the population of Palestine, large quantities of oranges and grapefruit will be available for export. Actual exports, however, will depend on whether or not shipments are further restricted with regard to size of fruit. It is estimated by the United States Bureau of Agricultural Economics that, if orange exports continue to be made up of size 120 and smaller, they will go on increasing and will reach about 19.3 million boxes in 1942-43. If, on the other hand, exports are restricted to sizes smaller than 120, the total will be reduced by 10 or 15 percent and will amount to about 16.4 million boxes in 1942-43. Similarly, if grapefruit exports are made up of sizes 64 to 112, as at present, exports in 1942-43 will reach about 3.7 million boxes. If, on the other hand, only sizes 80 and 96 are allowed shipment, exports will approximate 3.2 million boxes in 1942-43 (see table 36 and figures 36 and 37).

Table 36. Estimated production and exports of Palestine oranges and grapefruit, 1938-39 to 1942-43

Year ended May 31	Production			Exports					
				If not further restricted			If restricted		
				in size a/			in size b/		
	Oranges	Grapefruit	Total	Oranges	Grapefruit	Total	Oranges	Grapefruit	Total
	Million boxes	Million boxes	Million boxes	Million boxes	Million boxes	Million boxes	Million boxes	Million boxes	Million boxes
1938-39 c/	13.5	2.5	16.0	11.0	2.0	13.0	9.3	1.7	11.0
1939-40...	16.5	3.0	19.5	13.1	2.4	15.5	11.2	2.0	13.2
1940-41...	19.5	3.5	23.0	15.7	2.8	18.5	13.3	2.4	15.7
1941-42...	22.0	4.0	26.0	17.7	3.3	21.0	15.2	2.8	18.0
1942-43...	24.5	4.5	29.0	19.3	3.7	23.0	16.4	3.2	19.6

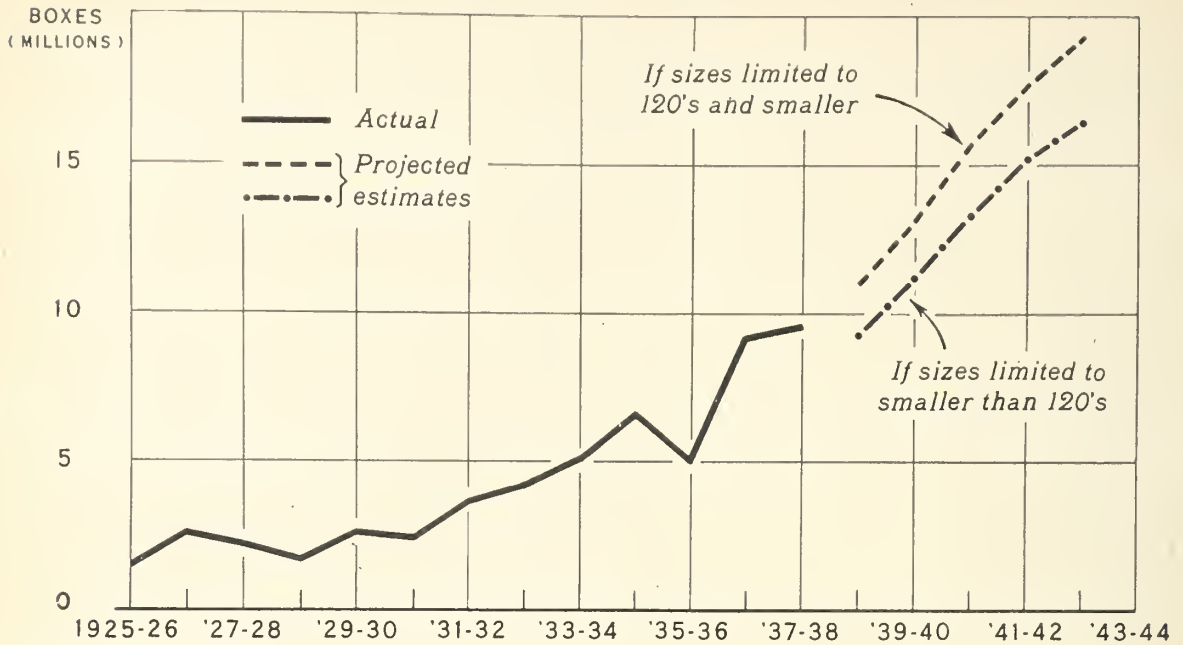
Estimated in the Bureau of Agricultural Economics, United States Department of Agriculture.

a/ Oranges 120's and smaller; grapefruit between 64's and 112's.

b/ Oranges smaller than 120's; grapefruit 80's and 96's only.

c/ Because of internal disturbances this season, these forecasts may not be fully realized.

PALESTINE: EXPORTS OF ORANGES, 1925-26 TO 1937-38 AND PROJECTED ESTIMATES FOR 1938-39 TO 1942-43

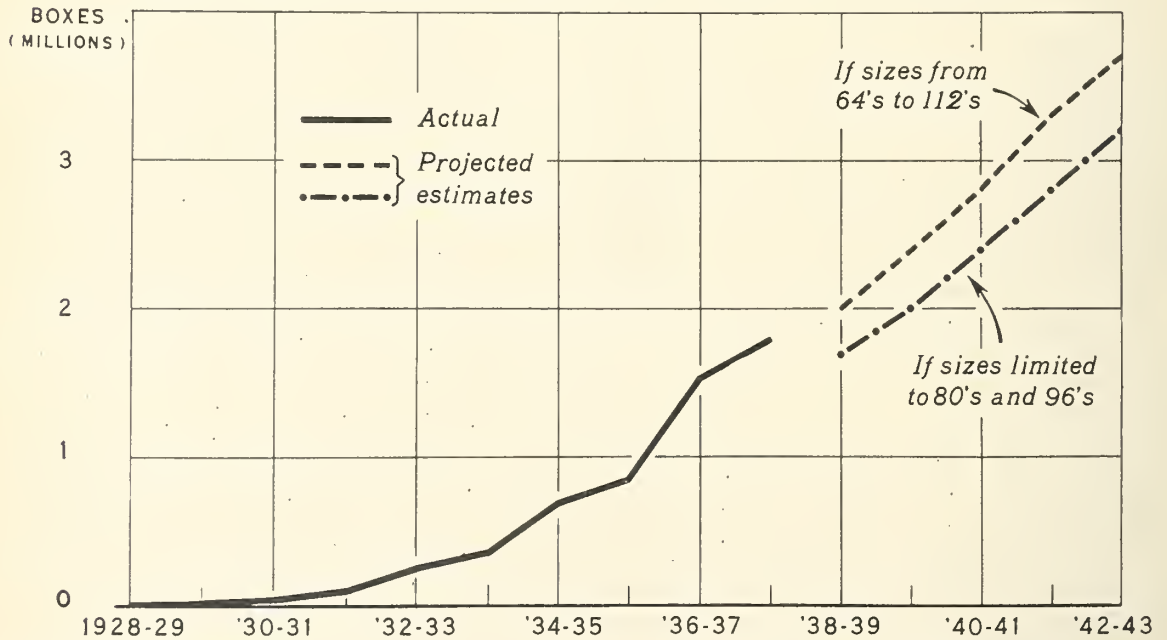


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Fig. 36

PALESTINE: EXPORTS OF FRESH GRAPEFRUIT, 1928-29 TO 1937-38 AND PROJECTED ESTIMATES FOR 1938-39 TO 1942-43



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Fig. 37

SUMMARY AND CONCLUSIONS

Until a few years ago, it was believed that the maximum amount of land suitable for citrus production in Palestine did not exceed 75,000 acres. Recent investigations, however, indicate that from the standpoints of climate, soil, and water requirements Palestine could easily double its present acreage under citrus. During the past 2 years, the real obstacle to acreage expansion has been the very low prices obtained for the fruit.

The bulk of the acreage now under citrus in Palestine was planted during the 10-year period 1927 to 1936. Of the estimated total of 74,000 acres, only about 40,000 are of bearing, but not full-bearing, age compared with a total of 686,000 bearing acres in the United States in 1937. The average yield of citrus fruit per acre in Palestine is the highest in any citrus-producing country. In 1937-38, it was about 340 boxes per acre compared with 188 boxes in California and 140 in Florida.

In 1937-38, Palestine exported approximately 11.5 million boxes of citrus fruit compared with 9.3 million boxes shipped from the United States. It is estimated that in 1942-43, citrus exports from Palestine will be twice as large as those of 1937-38, or about 23 million boxes. Although at present Palestine citrus fruit does not come into direct competition with the American product on European markets, it is very likely that in the future early arrivals of California summer oranges may feel the effect of increased late-season exports of Jaffa oranges.

Prominent among the marketing difficulties created by the increase in citrus production is the problem of culled fruit. At present between 2.5 and 3 million boxes of oversized and misshapen fruit remain in Palestine. While fresh-fruit consumption in that country has increased in recent years, it cannot absorb all the culled fruit. Moreover, the citrus-byproducts industry is young and in the throes of organizational and financial difficulties.

The 1936-37 season saw the largest crop, as well as the lowest prices, experienced in the Palestine citrus industry. In 1937-38, the crop was larger, but average prices were not so low. At the beginning of the 1937-38 season, marginal growers were losing heavily. As the season advanced and it became more difficult for Spain, Palestine's principal competitor on the European market, to export oranges, prices increased and new hopes were raised in the Jaffa industry.

Problems affecting the profitable marketing of the Palestine citrus crop include, first, the inability of Palestine, as a result of the "open door" policy, to enter into reciprocal trade agreements with citrus-importing countries; second, the high cost of production and, more especially, of marketing; and, third, the shortness of the season in which the steadily increasing crop must be marketed.

The first of these problems has been tackled on various occasions, but representations to the Mandatory Power and the League of Nations to free the foreign trade of the country of the restrictions imposed on it by virtue of Article 18 of the Palestine Mandate have proved unsuccessful. Some reduction in marketing costs may result from the formation of a Union of Cooperatives patterned after the California Fruit Growers Exchange. Final negotiations between cooperatives controlling more than 50 percent of the Palestine citrus

crop have not been completed, but it is likely that such a union may begin functioning during the 1938-39 season. The third problem, that of the short marketing season, will be partially solved as a result of the grafting of late-ripening orange varieties onto young grapefruit trees. This not only will have the advantage of lengthening the export season but will help to reduce the grapefruit crop, which has increased much faster than its markets.

Though the change in the "open door" policy, the formation of a Union of Cooperatives, and the lengthening of the marketing season may eventually enable Palestine citrus producers to export a good portion of their crop at a profit, it is doubtful whether the country will see again the days of large citrus plantings. Palestine farmers will probably have to adopt a program of crop diversification, which only a few years ago was scorned. Moreover, since the annual value of Palestine imports of foodstuffs exceeds that of its yearly exports of citrus fruit, mixed farming could go a long way toward building a sound agricultural economy and, at the same time, correct to some extent an abnormally passive balance of trade.

APPENDIX

Excerpts from Palestine Citrus Export Regulations for 1938-39 Season 9/

Size of boxes and count

(1) All citrus fruit exported under the provisions of these rules shall be packed in new and clean boxes.

(2) All oranges shall be packed on the American system and the fruit shall be of one consistent count and size throughout the box.

(3) The dimensions of the boxes for oranges (converted from centimeters) and the counts to be packed therein shall be as follows:

<u>Dimensions of Boxes</u>	<u>Counts</u>
Length 29.1 x width 14.6 x height 11.8 inches	120, 150, 180, 210, 240, 266, 294
Length 29.1 x width 14.6 x height 12.2 inches	150
Length 28.3 x width 14.2 x height 11.8 inches	150, 180, 210, 240, 266, 294
Length 26.8 x width 13.4 x height 11-11.4 inches	180, 210, 240, 266, 294

Provided that all counts of Valencia oranges shall be packed in boxes 26.8 x 13.4 x 11.0 or 11.4 inches.

(4) All grapefruit shall be of one consistent count and size throughout the box.

(5) The dimensions of the boxes for grapefruit and the counts to be packed therein shall be as follows:

<u>Dimensions of Boxes</u>	<u>Counts</u>
Length 29.1 x width 14.6 x height 11.8 inches	} 64, 30, 96, 112
Length 29.1 x width 13.0 x height 11.6 inches	
Length 26.8 x width 13.4 x height 11.4 inches	} 80, 96, 112
Length 26.0 x width 13.0 x height 11.4 inches	

Provided that the 64 count may be exported only from October 1 to January 31 each year, and that the boxes 26.8 x 13.4 x 11.4 inches and 26.0 x 13 x 11.4 inches may be used for export purposes only until January 31, 1939.

(6) All citrus fruit other than oranges and grapefruit exported under the provisions of these rules shall be packed in the boxes prescribed for oranges and grapefruit.

Contents and marking of boxes

(1) (a) All boxes of oranges, grapefruit, lemons, or other citrus fruit that are 29.1 inches in length shall be clearly marked on the side thereof, in letters at least 1 inch in height, "extra large."

(b) All boxes of oranges, grapefruit, lemons, or other citrus fruit that are 28.3 inches in length shall be clearly marked on the side thereof in letters at least 1 inch in height, "large."

(c) All boxes of oranges, grapefruit, lemons, or other citrus fruit that are less than 28.3 inches in length shall bear no distinguishing mark.

(2) No box containing more than one kind or variety of citrus fruit shall be exported.

(3) The kind of citrus fruit and, if oranges, the variety shall be marked on the box.

(4) The words "Jaffa oranges" or "Jaffas" shall not be marked on any box or wrapper containing any variety except Shamouti, nor shall the words "Jaffa grapefruit" or "Jaffas" be marked on any box or wrapper containing any variety except Marsh.

(5) The word "Valencia" shall not be marked on any box or wrapper containing any variety except Valencia.

(6) Every box shall be clearly marked on the brand end with the exact number of citrus fruit contained therein.

Abolition of the ad-valorem duty on canned grapefruit and on orange and grapefruit juices imported into the United Kingdom

As a result of the signing on November 17, 1938, of the reciprocal trade agreement between the United States and the United Kingdom, the 15-percent ad-valorem rate now paid on canned grapefruit, orange juice, and grapefruit juice entering the British market is to be abolished on January 1, 1939. This will primarily benefit American citrus growers, who at present supply almost all imports of such products into the United Kingdom. The young citrus-byproduct industry of Palestine may also benefit from this concession, which may stimulate its development, but exports will probably not increase greatly.

Summary of the recommendations of the committee set up to report on the creation of a central organization of all Jewish citrus growers in Palestine (Ichud), August 1938

The committee recommends the Ichud only if it will be able to dispose of 80 percent of the Jewish citrus crop.

Duration

The Ichud is to be organized and registered without any limitation of its duration. No member shall be entitled to withdraw from the Ichud before the end of the fifth financial year.

Who will be allowed to join the Ichud

Cooperatives that sign the application for the registration of the Ichud (founders).

Every other cooperative society or corporate body of growers (excluding traders), which dispose of not less than 100,000 cases of exportable fruit and whose application for membership has been approved by the Council.

Name of the Ichud

Pardess, Syndicate of Palestine Citrus Growers Cooperative Society, Limited.

The words "Pardess" and/or "Syndicate" shall not be used as any part of the name of any member of the Ichud.

Legal form and resources of the Ichud

The Ichud is to be registered under the Cooperative Societies Ordinance.

Every member, founders included, shall undertake to contribute to the funds of the Ichud not less than 500 Palestine mils per metric dunam (about \$10 per acre) or part thereof of all citrus groves of the growers affiliated to or associated with that member. Ten percent of this contribution shall be paid in on joining, and the balance shall be settled by a levy of not less than one mil per case of exported fruit.

Every member, founders included, shall undertake a liability for the debts of the Ichud of not less than 25 mils (about 12.5 cents) per box of his fruit exported during the financial year immediately preceding the date when such liability becomes effective, i.e., when the Ichud is dissolved. This liability of 12.5 cents per box is additional to the member's participation in the funds of the Ichud.

Governing bodies of the Ichud

The governing bodies shall be (1) General Meeting, (2) Council, (3) Executive Committees, (4) Auditing Committee, and (5) such subcommittees of (2) and (3) as it may be found desirable to appoint from time to time. All resolutions, with the exception of a resolution for dissolution, shall be passed by a simple majority of those present.

Brands and agencies

All members joining the Ichud, founders included, shall surrender to the Ichud all their brands, all their agencies (shipping, insurance, etc.), and all their commercial connections.

The brands or agencies surrendered by members, founders included, to the Ichud or acquired by the Ichud in any other manner at any time cannot be returned as such or in the shape of compensation or any other manner to any member, founders included, except in the case of dissolution of the Ichud.

The Council of the Ichud shall have the sole right to decide on the use of brands; that is, which brands are to be used, the quantity to be shipped under each brand, the fruit to be packed under a certain brand, the brands to be used for a country or for any one purchaser, and all other questions pertaining to the use of brands.

Neither the Ichud, as such, nor any of its members shall act as shipping agents.

Scope of activities of the Ichud

(1) The Ichud shall assume the responsibility for packing, transporting in Palestine from grove (fruit sheds) to stations and/or ports, shipping and marketing fruit, and purchasing of packing and other materials needed for the production and marketing of fruit.

(2) Packing:

(a) The Ichud shall have the unrestricted right to dispose of all the fruit of the growers after it has been declared ripe for picking and packing by members.

(b) Growers and members of their families (including workers, small holders' settlements, and cooperative settlements) shall not be employed as packers, assistant-packers, graders, sorters, wrappers, or nailers on their own fruit, whether the packing is done in the grove or in central packing houses.

(c) All packers, assistant-packers, graders, sorters, wrappers, and nailers shall be engaged and paid by the members or their accredited representatives. The conditions of employment of all packers, assistant-packers, sorters, graders, wrappers, and nailers - that is, the qualifications, minimum and maximum rates of pay, composition (number) of the packing squads, etc. - shall be fixed by the Ichud.

(d) The Ichud shall appoint inspectors, who shall have complete freedom of entry to all premises where fruit is packed and the right to examine the fruit before it is packed, while in the process of being packed, and after it has been packed.

(e) The inspectors shall make their observations and submit their reports direct to the members. The Executive Committee shall appoint a small Board of Appeal to consider and deal with any differences that may arise between members and inspectors.

(3) Transportation:

(a) Members shall make all arrangements, fix all conditions, and pay all costs for transportation of all exportable packed fruit from groves and/or central packing houses to railroad stations and/or ports.

(b) The management of the Ichud alone shall be responsible for giving all instructions to the members as to the time and method of picking and all matters pertaining to packing and transportation of exportable fruit of members.

(c) There shall be no objection to Members' using growers and/or their families or any suitable rolling stock belonging to the growers for the transportation of their own fruit or of the fruit belonging to other growers; provided that members fix the rates of pay and other conditions of employment and also the time, quantities, and destinations of all fruit to be exported, whether it be the fruit of the growers who are engaged in transport services or the fruit of other growers.

Financing of citrus crops

Members shall continue to grant seasonal production advances to growers (in the spring and summer); but it is suggested that an investigation be made

into the question of the possibility, desirability, and advantage of growers' obtaining seasonal production advances, in part or in whole, through credit cooperatives.

Members shall also continue to be the agents through whom seasonal advances are to be made available in the autumn and winter for defraying the costs of picking the fruit, carrying the fruit from the trees to the fruit sheds and/or central packing houses, and packing the fruit, that is, for wages paid to packers, assistant packers, sorters, wrappers, nailers, and porters.

The Ichud shall obtain the advances needed to cover the costs of all packing materials, the transportation of packed fruit in Palestine and from Palestine to markets, and the administrative and other expenses in Palestine and abroad.

Members shall be bound by regulations to obtain all packing materials from the Ichud, and each member shall bind its growers to obtain their packing materials from it.